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INFLUENCE OF TYPE FORM ON SPEED OF READING

MILES A. TINKER AND DONALD G. PATERSON

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The problem of the influence of type form (lower case versus all capitals, or lower case versus italics) on speed of reading connected prose as related to the field of advertising has been attacked by Starch. In order to compare the influence of type form upon reading performance he printed two pieces of text, alike in all respects except that one was set up in all capitals and the other in roman or lower case. These were then read by forty persons with a resulting ten per cent advantage in speed in favor of the text set up in lower case. Starch also performed the same experiment using italics versus lower case, stating, "the test showed that the italic text was not read as rapidly as the roman text."[1]

Starch's experiments are perhaps to be considered preliminary in view of the small number of subjects, failure to specify the difficulty of the text, lack of alternate test forms, lack of checks upon comprehension, failure to state method of procedure (presumably Starch used the A B B A sequence by sub-dividing his group of forty subjects), lack of published data for the italics versus lower case test, and finally lack of measures of variability for the all capitals versus lower case test which prevents the determination of the statistical significance of the obtained differences. In view of the importance of this problem in advertising and in newspaper headline composition and the tentative character of Starch's findings the following investigation was undertaken.

[1] Daniel Starch, Advertising, pp. 181–182, pub. by Scott, Foresman & Co., 1914; also Daniel Starch, Principles of Advertising, pp. 657–658, pub. by A. W. Shaw Co., 1923.

Progress made in the field of standardized achievement tests since Starch's original study, provides material admirably adapted to our investigation of relative reading performance as affected by lower case, all capitals, and italics material. Reference is here made to the appearance of the Chapman-Cook Speed of Reading Test, Forms A and B, designed to measure the rate of reading rather than comprehension. This test is so arranged that it affords not only a measure of sheer speed of reading but also an adequate check upon accuracy and amount accomplished within a set time-limit. There are thirty paragraphs in each form of the test. Each paragraph contains thirty words. In the second half of each paragraph some single word spoils the meaning. The reader crosses out this word as evidence of reading and understanding the paragraph. It is impossible to cross out the proper word without actually reading the whole paragraph. Although understanding is essential, comprehension plays a minor rôle for the vocabulary content is simple and therefore speed is the important function measured. The following is a sample paragraph:

> "There was not a drop of ink in the house, for someone had broken the bottle we kept it in, so Mary decided to finish her letter with a pen."

The thirty paragraphs are printed in two columns on an $8\frac{1}{2}$ by 11 inch sheet. The length of line was 80 mm. ($3\frac{5}{16}$ inches).

METHOD

Permission having been secured from the publishers,[2] Forms A and B of the Chapman-Cook Speed of Reading Test were set up in 10 point old style in each of the three type forms to be investigated. Arrangements were made to test recitation sections in sophomore general psychology. The A B B A sequence

[2] J. B. Lippincott Co., Philadelphia, kindly permitted the writers to reprint the Chapman-Cook Speed of Reading Tests Forms A and B for experimental purposes. The coöperation of the publishers is hereby gratefully acknowledged.

was adhered to for each form of the test and for each style of type. This yielded the following test groups:

Group I.	Form A, all capitals,	Form B, lower case
Group II.	Form B, all capitals,	Form A, lower case
Group III.	Form A, lower case,	Form B, all capitals
Group IV.	Form B, lower case,	Form A, all capitals
Group V.	Form A, italics,	Form B, lower case
Group VI.	Form B, italics,	Form A, lower case
Group VII.	Form A, lower case,	Form B, italics
Group VIII.	Form B, lower case,	Form A, italics

The number of subjects used was 80 in each of the above groups, or 640 in all. Some groups contained more than 80 subjects when tested, but the number in each group was made equal by random elimination of excess cases. The sections were allotted at random to each of the writers who conducted all of the tests.

Standard directions for the reading test were followed, including the fore-exercise, except for time-limit. This was reduced from $2\frac{1}{2}$ to $1\frac{3}{4}$ minutes. The standard time-limit is adjusted for performance by elementary school children and when used with university sophomores often yields perfect scores. The reduced time-limit proved adequate since only two of the 640 students made a perfect score in the first trial and only four of the same 640 students made a perfect score in the second trial where practice effects are operative. The students were induced to compete with other students in the tests by promising to inform them of their standings in comparison with sophomore averages. The real purpose of the experiment was not explained and could not have been surmised, at least until the second form of the test was given.

Instead of scoring the test in terms of number of paragraphs correctly marked we totalled the number of paragraphs attempted for we were interested primarily in the number of words read. This method of scoring would be objectionable if such reading performances involved appreciable errors. However, errors in marking paragraphs were rare indeed as

computations showed that 99.7 per cent of all paragraphs read were marked correctly by the students.

RESULTS

The A B B A method of sequence guaranteed that our mass comparisons would not be vitiated by differences due to difficulty of the alternate forms A and B, nor to the presence of any marked practice effect in passing from one trial to the second because all these effects are systematically varied cancelling each other as far as the final averages are concerned.

TABLE 1

Difficulty of Forms A and B of reading test in relation to practice effects. Differences between the means are always expressed as mean of Form A minus mean of Form B

FORM COMPARISON	MEAN	P.E.dist.	DIFFERENCES BETWEEN MEANS	NUMBER OF CASES
A followed by B	18.33	2.78		
	17.97	1.45	0.36	320
B followed by A	15.55	2.15		
	19.62	2.72	4.07	320
All A vs. All B	18.98	2.77		
	16.76	2.51	2.22	640

However, it is desirable to ascertain the combined effect of practice and difficulty of forms in order that the obtained means for the sub-groups may be corrected and used to determine the final differences. Figures for making this correction will be found in table 1, column 4.

It will be noted from table 1 that the two forms are of approximately equal difficulty when Form B follows Form A. The difference between the means was only 0.36 of a paragraph. However, when Form A follows Form B, the difference was 4.07 paragraphs indicating that Form A is much easier than

Form B. The true difference between Forms A and B is shown in the final comparison where practice effects have been systematically varied and eliminated by proper sequence of tests in administration. This true difference amounts to 2.22 paragraphs. Form B is definitely more difficult than Form A. We infer that Chapman and Cook so standardized their Speed of Reading Test that the practice effect in repeating the test on

TABLE 2

Lower case versus all capitals

Differences given are for the mean score on lower case text minus the mean score on all capitals text. The mean score is the average number of paragraphs, of 30 words each, read.

COMPARISON	SEQUENCE	MEAN	CORRECTED MEAN	P.E.-dis.	DIFFERENCE	NUMBER OF SUBJECTS
Group I—(A) Caps vs. (B) L.C.	1. Caps	16.95	16.95	2.21	2.54	80
	2. L.C.	19.13	19.49	2.51		
Group II—(B) Caps vs. (A) L.C.	1. Caps	14.55	14.55	2.25	1.78	80
	2. L.C.	20.43	16.33	2.88		
Group III—(A) L.C. vs. (B) Caps.	1. L.C.	19.30	19.30	3.12	2.14	80
	2. Caps	16.53	16.87	2.12		
Group IV—(B) L.C. vs. (A) Caps.	1. L.C.	16.46	16.46	1.92	2.17	80
	2. Caps	18.41	14.31	2.15		
Groups I, II, III, IV—All Caps vs. All L.C.		16.61	16.61	2.37	2.22	320
		18.83	18.83	2.83		

a subject would be just offset by the increased difficulty of Form B. Therefore, if a re-test is desired in testing individuals and groups for speed of reading, Form A should always be given first followed by Form B.

The above figures enable us to apply a correction to obtained means for sub-groups so that the true differences between the means will be revealed uninfluenced by either practice

effects or inequality in difficulty of the forms used. In summary form: (1) if Form A follows Form B the number 4.1 is subtracted from the mean for Form A to make it comparable with the mean for Form B; (2) if Form B follows Form A, the number 0.36 is added to the mean for Form B to make it comparable with the mean for Form A. These are the corrections which have been made for sub-group comparisons and will appear in the tables under the rubric "Corrected Mean."

A. Lower case versus all capitals

Table 2 gives the results for reading performance when the tests are set up in lower case and also in all capitals. The differences between the corrected means (column 6 of table 2) in every instance are in favor of lower case text which was read faster. The differences range from 1.78 paragraphs for Group II to 2.54 for Group I. The final comparison based on 320 subjects (Groups I, II, III, IV combined) reveals a difference of 2.22 paragraphs in favor of lower case. Expressed as a percentage of the mean reading performance for all capitals, this is a difference of 13.4 per cent. This difference is both certain and very large, the difference being 10.1 times the probable error of the difference between the means.

The 13.4 per cent differential in favor of lower case text takes on added meaning when expressed in terms of the number of words read per second. The subjects read 4.74 words per second of the all capitals text and 5.38 words per second of the lower case text. For the time-limit used in this study ($1\frac{3}{4}$ minutes) we note that the average student read 564.9 words of the lower case text whereas he read only 498.3 words of the all capitals text. Whether this ratio would hold for more extended periods of time, of course, is problematical.

B. Lower case versus italics

When we compare lower case text versus italics text the differences although uniformly favoring lower case are by no means so great nor so significant from a statistical point of

view. The detailed comparisons are presented in table 3. The differences between the corrected means are shown in column 6 of table 3. In every case the difference is less than one paragraph. The final comparison for Groups V, VI, VII, and VIII combined, based on 320 subjects reveals a difference of 0.49 of a paragraph in favor of lower case, a difference of 2.8 per cent. This difference is only 2.23 times the probable error

TABLE 3

Lower case versus italics

Differences given are for the mean score on lower case text minus the mean score on italics text. The mean score is the average number of paragraphs, each containing 30 words, read.

COMPARISON	SEQUENCE	MEAN	CORRECTED MEAN	P.E.dis.	DIFFERENCE	NUMBER OF SUBJECTS
Group V—(A) It. vs. (B) L.C.	1. It.	18.21	18.21	2.77	0.55	80
	2. L.C.	18.40	18.76	2.83		
Group VI—(B) It. vs. (A) L.C.	1. It.	15.45	15.45	1.93	0.48	80
	2. L.C.	20.03	15.93	2.91		
Group VII—(A) L.C. vs. (B) It.	1. L.C.	18.88	18.88	2.62	0.72	80
	2. It.	17.80	18.16	2.51		
Group VIII—(B) L.C. vs. (A) It.	1. L.C.	15.74	15.74	2.27	0.24	80
	2. It.	19.60	15.50	2.70		
Groups V, VI, VII, VIII—All It. vs. All L.C.		17.77	17.77	2.68	0.49	320
		18.26	18.26	2.94		

of the difference indicating that there are seven chances in 100 that a similar experiment would actually reverse the difference. It was found that the average student read 5.08 words per second of the italics text and 5.22 words per second of the lower case text.

Attention is invited to the apparent discrepancy between the means for lower case as given in tables 2 and 3. In table 2

the mean for 320 subjects is 18.83 whereas in table 3 the mean for *another group* of 320 subjects is 18.26. This difference of 0.57 paragraphs between the two means is 2.5 times the probable error of the difference. Of even more significance is the fact that in each corresponding sub-group the reading performance for lower case always favors those in table 2. One might believe this to be due to a possible difference in "mental set," in the one case dominated by a lower case versus all capitals rivalry and in the other by a lower case versus italics rivalry. This is ruled out, however, by comparing the performance of Groups III and VII. Form A lower case came first in both these groups. Moreover, the same incentives and directions were applied. We note that Group III is superior to Group VII in reading performance. It is possible that in arranging the testing program we happened to select sections for the lower case versus all capitals comparison which on the whole were slightly superior in reading ability to the sections used for the lower case versus italics comparison. Even if this occurred, it does not detract from the significance of the comparisons we are here reporting.

DISCUSSION OF RESULTS

As pointed out above, the material printed in lower case was read 13.4 per cent faster than the material in all capital letters. At least three factors seem to be operative in producing this difference: (1) The space covered by the text printed in all capitals was 35 per cent greater than for the same material in lower case letters. This alone would tend to slow up the reading of all capitals for the number of fixational pauses is increased when the same material is spread over a greater space. In a previous study[3] it has been shown that the compactness of printing achieved by employing numerals rather than words in arithmetical problems brought about faster reading. (2) The total word form is more characteristic with

[3] Tinker, M. A. Numerals Versus Words for Efficiency in Reading. J. Appl. Psychol. (in press).

words printed in lower case letters than with those printed in all capitals. Many studies have demonstrated that total word-form is an important factor in the perception of words. Therefore, the less definite word-form present in words composed of all capital letters tends to slow up the speed of reading this material as compared with words composed of lower case letters. (3) The reading of the ordinary individual is concerned largely with material set up in lower case type. This emphasizes the fact that material printed in all capitals produces a less familiar reading situation and therefore undoubtedly slows up the reading somewhat. There is a possibility that the novelty of all capitals would lead to increased interest and effort and thus tend to decrease differences in reading performance. At any rate, if such effect is present, it is not sufficient to compensate entirely for greater efficiency in reading the more familiar lower case text. Perhaps, if the effect of novelty could be held constant, the obtained difference in favor of lower case type would be even greater.

Lower case text was read only 2.8 per cent faster than italic text. Reasons for this difference being so small are found when we compare the two texts: (1) The material in italics covered exactly the same space as that in lower case letters. Therefore no extra space is present to produce a probable increase in total number of fixations. (2) Word form in italic printing is very similar to word form in lower case text. However, we must bear in mind that the difference between means in each sub-group was always in favor of the lower case text. This indicates that italic text is actually harder to read than lower case text. It is possible that greater effort was expended in reading the italics. This increased effort may have reduced differences between italic text and lower case text and thus obscured true legibility differences. Greater eye strain may have been involved in the reading of the italic material.

In comparing our results with those reported by Starch we note that the difference in favor of lower case versus all capitals is 13.4 per cent instead of 10 per cent. Starch's results expressed in words read per second were 5.01 words per

second for lower case and 4.55 words per second for all capitals whereas our results show 5.38 words read per second for lower case and 4.74 words per second for all capitals. Our subjects read both type forms more rapidly than Starch's subjects but it is impossible to determine whether this difference was due to better performers or to the employment of easier material.

Our results for italic versus lower case type likewise verify Starch's general statement in behalf of the greater legibility of lower case type. However, the italic lower case difference turns out to be rather slight, the advantage being only 2.8 per cent.

SUMMARY AND CONCLUSIONS

1. A speed of reading record was obtained for texts set up in roman lower case, italic, and all capital letters. Comparisons were made between all capital versus lower case text, and between italic versus lower case text. There were 640 subjects used in the experiment.

2. The text in lower case letters was read 13.4 per cent faster than that in all capitals. The difference in favor of the lower case text is highly significant. There were 4.74 words read per second of the all capitals and 5.38 words per second of the lower case text.

3. The text in lower case letters was read 2.8 per cent faster than the italics. The direction of the difference was consistent for all sub-groups. The subjects read 5.08 words per second of the italics and 5.22 words per second of the lower case text.

4. The following conclusions seem justified by these data: (*a*) Text printed in all capitals is less legible than material in lower case letters and slows down speed of reading to a very marked degree. (*b*) Text printed in italics is slightly less legible than material in lower case letters and decreases speed of reading somewhat.

A STUDY OF PLAY IN RELATION TO INTELLIGENCE[1]

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Much speculative material has appeared from time to time regarding the play life of children of varying degrees of intelligence. The results of the scientific measurements conducted by Terman and others have afforded *some* objective evidence of the play behavior of gifted children. However, these workers have been limited by inadequacies of technique. Terman, in studying 643 gifted children, had the subjects rate 90 play activities with respect to interest in them, time devoted to them, etc. Terman concluded that "the gifted are somewhat more interested than the control pupils in intellectual and sedentary games" (1).

In a study previously reported, the writers presented data regarding the play behavior of fifty gifted[2] children (2). Fifty children of IQ 140 and above were selected for intensive study, each child being paired with a mentally average child of like age, sex, and environment. The two groups were compared and the following conclusions drawn:

1. The gifted group and the control group exhibited the same versatility of interest in play, engaging in the *same number of activities* during the course of one week.

---

[1] Paper read before Section I of The American Association for the Advancement of Science, Nashville, January 3, 1927.

[2] The term "gifted" as here used posits I.Q. 140 and above. No other implications are intended.

2. The gifted children were found to be more solitary in their play than average children.

3. The gifted group engaged more frequently in, and spent more time upon, and preferred to a greater extent than the control group, activities involving reading.

4. The gifted group tended to avoid certain types of vigorous physical play. However, the gifted group participated more often than the control group in certain active plays and games.

5. As compared with average children the gifted displayed little interest in boxing and much interest in certain activities in which a sense of humor is requisite.

TABLE 1

Diversity of play interest versus IQ

IQ	FREQUENCY	MEAN NUMBER OF ACTIVITIES ENGAGED IN
Less than 70	17	27.50
70– 79	101	31.03
80– 89	218	31.56
90– 99	421	30.81
100–109	549	29.75
110–119	435	31.01
120–129	366	32.69
130–139	142	31.00
140 and up	46	34.67
Total.....	2,295	

In an unpublished study Miss Edith Lewis assembled play data for a large number of children varying widely in intelligence. Table 1 and figure 1 display the mean number of play activities participated in during the course of one week by these children assembled in groups according to IQ. It will be noted in table 1 and figure 1 that the children of low IQ engaged in slightly fewer activities than did the normal children and that the children of high IQ engaged in a slightly larger number of play activities than did normal children. However, the differences in the means are not large and therefore have little significance. Versatility of play interest therefore does not appear to be intimately associated with differences in IQ.

Table 2 and figure 2 display the mean indices of social participation[3] for the children assembled according to IQ. Table 2 and figure 2 suggest that the children of low IQ are much more social in their play than are normal children or children of

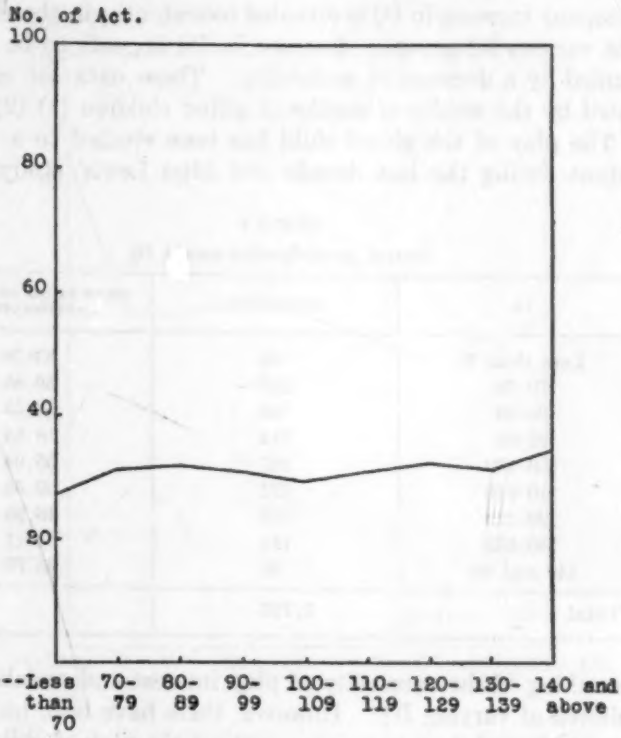

FIG. 1. DIVERSITY OF PLAY INTEREST VERSUS IQ MEAN NUMBER OF PLAY ACTIVITIES ENGAGED IN DURING THE COURSE OF ONE WEEK BY CHILDREN OF VARYING IQ

high IQ. The unusual sociability of children of extremely low IQ's in figure 2 may be due to the small number of cases

[3] The derivation of the index of social participation is explained on page 389.

studied. Study of these data reveals also a tendency for children of high IQ to engage relatively in few social activities. With increase in IQ there is attended a progressive decrease in participation in activities of a pronouncedly social nature. The tendency for a diminution in social participation to accompany increase in IQ is revealed consistently in the data for the various IQ groups. Increase in IQ appears to be accompanied by a decrease in sociability. These data are corroborated by the results of studies of gifted children (1) (2).

The play of the gifted child has been studied to a limited extent during the last decade and Miss Lewis' study shows

TABLE 2

Social participation versus IQ

IQ	FREQUENCY	MEAN INDEX OF SOCIAL PARTICIPATION
Less than 70	23	83.58
70–79	115	56.80
80–89	186	56.55
90–99	314	58.64
100–109	387	55.64
110–119	322	52.58
120–129	279	48.95
130–139	121	52.41
140 and up	46	45.76
Total.....	1,793	

something of the versatility of play interest and sociability of children of varying IQ. However, there have been no extensive studies of the numerous aspects of the play of children of subnormal, normal, and relatively superior degrees of intelligence. The results of available studies are partial and suggestive only. In the Terman study and in the Witty-Lehman study children of IQ 140 and above were compared with mentally average children. The following paper reports a study of the play behavior of three groups of boys and three groups of girls of subnormal, normal, and relatively superior degrees of intelligence respectively.

METHOD

The Lehman Play Quiz was administered to more than 6000 children in grades III to XI of the public schools of Kansas City, Mo. The children were asked to indicate among a com-

FIG. 2. MEAN INDEX OF SOCIAL PARTICIPATION VERSUS IQ

prehensive and catholic list of two hundred activities *only those* activities in which they had participated during the preceding week.[4] The children were asked later to indicate: (1) the three activities which they liked best, (2) the one activity

[4] The activities included in the Play Quiz are printed in the Pedagogical Seminary for June, 1927.

to which they gave the most time, and (3) the activities in which they participated alone. The activities in which the children engaged without companionship will be designated solitary activities when alluded to in the discussion following.

Intelligence test scores were obtained from the files of the Kansas City, Missouri, public schools.[5] In order to study the

TABLE 3

*Chronological ages of boys and girls included in the present study of play behavior**

C.A.	GIRLS	BOYS
7½	0	0
8½	2	0
9½	6	2
10½	4	6
11½	17	12
12½	10	7
13½	10	12
14½	14	17
15½	3	12
16½	0	3
Totals.....	66	71

* Since the pupils were equated on the basis of C.A., the figures in the body of table 3 indicate the numbers of pupils in the dull and bright groups respectively. It was not possible to equate all of the pupils with normal children from available data. The normal group of girls employed as a control group contained but 53 girls and the group of normal boys had only 61 boys therein.

relationship between IQ and type of activity interest, two groups, each containing 71 boys, and two groups, each containing 66 girls, were selected. An attempt was made also to secure control groups of mentally normal[6] pupils, but since the

[5] The writers are indebted to Mr. George Melcher and to Miss Edith Lewis for assistance in obtaining and assembling these data. The intelligence test ratings were obtained by means of the Terman Group Test and the National Intelligence Test.

[6] As here used the term "normal" posits IQ 90–110. No other implications are intended.

TABLE 4

Intelligence quotients of pupils included in the present study of play behavior

IQ	DULL GIRLS	NORMAL GIRLS	BRIGHT GIRLS	DULL BOYS	NORMAL BOYS	BRIGHT BOYS
56	1					
57						
58				1		
59						
60	1					
61						
62						
63						
64						
65						
66				1		
67	1			1		
68				1		
69						
70	1					
71				3		
72	2					
73						
74						
75	1			1		
76	2			1		
77	2			1		
78	3			4		
79	6			1		
80	1			2		
81	2			1		
82	2			2		
83	4			2		
84	7			4		
85	4			5		
86	7			4		
87	8			6		
88	4			10		
89	7			5		
90				2		
91				6		
92				6		
93				1		

TABLE 4—*Continued*

IQ	DULL GIRLS	NORMAL GIRLS	BRIGHT GIRLS	DULL BOYS	NORMAL BOYS	BRIGHT BOYS
94		5			4	
95		3			8	
96		3			5	
97		4			5	
98		5			4	
99		2			3	
100		6			9	
101		5			1	
102		4			4	
103		3			6	
104		5			3	
105		4			4	
106		4			5	
107						3
108						5
109						7
110			5			8
111			6			6
112			4			5
113			7			2
114			3			3
115			2			
116			6			4
117			2			
118			3			1
119						2
120			2			1
121			5			1
122			3			3
123			2			1
124			2			1
125						1
126						2
127			2			1
128			1			3
129			1			1
130			2			
131						1
132						1
133						

TABLE 4—*Concluded*

IQ	DULL GIRLS	NORMAL GIRLS	BRIGHT GIRLS	DULL BOYS	NORMAL BOYS	BRIGHT BOYS
134			2			1
135						1
136						
137						
138			1			
139						
140			1			1
141			1			
142						
143						1
144			1			1
145						1
146						
147						
148						
149			2			1
150						
163						1
Total.....	66	53	66	71	61	71
Range....	56–89	94–106	110–149	58–93	94–106	107–163
Mean.....	82.2	100.09	119.94	84.3	99.65	118.37

children were equated on a fourfold basis, namely, sex, race, C.A., and school attended, it was impossible to obtain the desired numbers of normal pupils from available data. The normal group of girls employed as a control group contained but 53 girls and the group of normal boys had only 61 boys therein. There are however sufficient numbers in the control groups to yield fairly representative results.

The three groups included respectively: (1) children having IQ's of 93 or less, (2) children having IQ's of 94 to 106 inclusive, and (3) children having IQ's of 107 or above. Table 3 presents the C.A. distribution and table 4 gives the IQ's for the several groups.

TABLE 5

Play activities more commonly participated in by dull boys than by bright boys

NAME OF ACTIVITY	PER CENT PARTICIPATING			PER CENT DIFFERENCE
	Dull	Normal	Bright	
*Sleigh riding	39	21	16	23
†Playing with pet dogs	63	54	41	22
‡Wrestling	59	44	39	20
*Going to parties or picnics	25	7	7	18
*Telling or guessing riddles	41	37	25	16
‡Just running and romping	44	39	28	16
*‡Playing robber and police	24	11	8	16
Looking at pictures	48	49	32	16
‡Boxing	42	42	27	15
*†Just playing catch	41	28	27	14
Riding in an auto	73	56	59	14
‡Riding a bicycle	34	23	20	14
Chewing gum	83	65	69	14
†Toy trains, ships, autos, wagons, etc	16	16	3	13
‡Hop, skip, and jump	13	7	1	12
‡Pole vaulting	16	6	4	12
*‡Playing cowboy	20	11	8	12
*Going to church or to mass	35	20	24	11
‡Jumping for distance	21	18	10	11
*‡Crack the whip	17	6	6	11
*†Playing Indian	18	7	7	11
*Helping somebody with his work	72	69	61	11
Whistling	56	59	45	11
Writing letters	38	18	28	10
Writing poems	13	6	3	10
*†Blind man's bluff	14	6	4	10
*†Playing pool	17	8	7	10
*‡Pussy wants a corner	16	4	6	10
†Coasting on a wagon	23	25	14	9
*Going to entertainments, concerts, etc	20	11	11	9

TABLE 5—*Continued*

NAME OF ACTIVITY	PER CENT PARTICIPATING			PER CENT DIFFERENCE
	Dull	Normal	Bright	
*Listening to stories	34	39	25	9
*Matching pennies	20	13	11	9
Just singing	39	34	30	9
†Building snow men, snow forts, etc.	37	30	28	9
*†Golf	8	2	0	8
Number of activities in which the percentage difference between participation of dull and bright boys is 8 or more				35

* Activities involving social participation.
† Activities involving a moderate amount of motor response.
‡ Activities involving rather vigorous motor response.

The children ranged in C.A. from 8½ to 16½; most of them were of ages 11½ to 14½. (See table 3.)

Table 4 shows that the mean IQ of the mentally retarded boys was 84.30 and the mean IQ of the retarded girls was 82.20. The mean IQ of the normal pupils was approximately 100.00. The mean IQ's of the bright boys and of the bright girls were 118.37 and 119.94 respectively.

RESULTS

Table 5 displays the activities of the Play Quiz which were engaged in more frequently by the dull than by the bright boys. In order to facilitate comparisons, the per cent of each of the three groups participating in each of the activities is presented. In table 5 no activity is listed unless the difference between the dull and the bright groups is 8 per cent or more. Table 5 displays therefore the activities to which the mentally retarded children turned with greater frequency than the bright children.

Table 6 displays the activities in which the bright boys engaged more often than the dull boys. Again no activity is listed unless the group difference is 8 per cent or more.

It is of interest that, whereas, table 5 contains 35 activities,

table 6 contains only 8 items. While there are 35 activities in which the dull boys engaged with much greater frequency than the bright ones, there are 8 activities only in which the bright boys engaged much more often than the dull boys. The corresponding numbers for the dull and the bright girls were 29 and 10 respectively. (See tables 9 and 10.)

The median number of activities participated in by each group was determined. The median for the dull boys was

TABLE 6

Activities more commonly engaged in by bright boys than by dull boys

NAME OF ACTIVITY	PER CENT PARTICIPATING			PER CENT DIFFERENCE
	Bright	Normal	Dull	
Reading jokes or funny sayings	69	71	58	11
Looking at the daily comic strips	92	83	82	10
†Drawing with pencil, pen, chalk, or crayon	49	35	39	10
*Watching athletic sports	52	42	42	10
Listening to the victrola	54	44	45	9
†Playing other musical instruments than the piano (for fun)	41	18	32	9
*‡Swimming	25	16	16	9
†Coasting on a sled	69	59	61	8
Number of activities in which the percentage difference between participation of bright and dull boys is 8 or more				8

* Activities involving social participation.
† Activities involving a moderate amount of motor response.
‡ Activities involving rather vigorous motor response.

35.47; the median for the bright boys was 29.60. The median for the dull girls was 30.98, whereas, the median for the bright girls was 28.12. Sixty-three per cent of the dull boys reached or exceeded in activity participation the median of the bright boys, and 55 per cent of the dull girls reached or exceeded the median of the bright girls. The difference in total number of activities participated in by each group of girls is not great. There is therefore apparently little difference in the *number* of

activities engaged in by the various groups of children assembled according to IQ. Dull children appear to be *slightly more versatile* in their play interests than are bright children. This finding is corroborated by the data secured by Miss Lewis. (See fig. 1.) The differences between the groups are not primarily in number, they are in the types of activities to which the various groups turn. It is true of course that there are certain activities to which dull children turn with great frequency, activities toward which they find almost universal interest. These activities will be commented upon briefly in the following discussion.

THE GROUPS OF BRIGHT PUPILS PARTICIPATE IN FEWER ACTIVITIES OF A MOTOR TYPE

The writers have placed a dagger (†) before each activity in tables 5, 6, 9, and 10, which in their judgment involves a *moderate amount of motor response.* A double dagger (‡) has been placed before each of the activities in these tables which seems to demand *rather vigorous motor activity.* It is true of course that almost any activity involves some motor response. However, it is clear that some activities involve much more of such response than others. When generous allowance is made for erroneous judgment in the above regard, it is evident that the dull pupils participated much more frequently than the bright in activities involving motor response. The following table displays the number of activities of each type engaged in by the two groups of boys and girls.

TABLE A

Number of activities involving motor response which were engaged in by two groups of boys and girls

	NUMBER OF ACTIVITIES			
	Boys		Girls	
	Moderate Motor Response	Vigorous Motor Response	Moderate Motor Response	Vigorous Motor Response
Dull	9	11	7	8
Bright	3	1	1	0

TABLE 7

NAME OF ACTIVITY	PER CENT MENTIONING IT			PER CENT DIFFERENCE
	Dull	Normal	Bright	
A. Activities more frequently mentioned by dull boys as favorite activities				
‡Wrestling	17	6	3	14
‡Boxing	21	11	8	13
‡Riding a bicycle	13	10	6	7
*‡Basket ball	34	27	28	6
*‡Baseball with a hard ball	4	0	0	4
*Checkers	4	1	0	4
*‡Volley ball	6	0	3	3
‡Roller-skating	4	1	1	3
†Coasting on a wagon	3	1	0	3
Riding in an auto	4	7	1	3
*Having "dates"	3	0	0	3
Reading or looking at magazines	4	1	1	3
B. Activities more frequently consuming the most time of dull boys				
‡Boxing	4	1	0	4
†Coasting on a wagon	3	1	0	3
‡Riding a bicycle	3	3	0	3
*Going to the movies	7	7	4	3
*Going to Sunday School (and liking it)	3	3	0	3
*Having "dates"	3	0	0	3
Reading or looking at magazines	3	1	0	3
†Making or assembling a radio or other electrical apparatus	4	1	1	3
*Helping somebody with his work	6	3	3	3

* Activities involving social participation.
† Activities involving a moderate amount of motor response.
‡ Activities involving rather vigorous motor response.

It is of especial interest that five activities distinctly motor in type head the list of favorite activities for the dull boys. (See table 7.) It is significant further that "Boxing" and

"Wrestling," both pronouncedly vigorous activities, were engaged in with much greater frequency and pleasure by the dull group. Indeed, frequency of mention of these two activities

TABLE 8

NAME OF ACTIVITY	PER CENT MENTIONING IT			PER CENT DIFFERENCE
	Bright	Normal	Dull	
A. Activities more frequently mentioned by bright boys as favorite activities				
Reading books	21	10	4	17
Looking at the Sunday "funny paper"	10	7	3	7
*‡Swimming	13	10	6	7
*‡Building snow men, snow forts, etc.	6	6	0	6
*Teasing somebody	6	0	1	5
†Coasting on a sled	14	14	10	4
Driving an auto	8	7	4	4
*Watching athletic sports	7	6	3	4
†Sliding on a toboggan slide	3	0	0	3
Chewing gum	3	0	0	3
Looking at the daily comic strips	3	0	0	3
*‡Running races	3	3	0	3
*‡Playing Indian	3	0	0	3
*‡Digging caves or dens	3	0	0	3
B. Activities more frequently consuming the most time of bright boys				
Reading books	24	14	11	13
*‡Digging caves or dens	3	0	0	3

* Activities involving social participation.
† Activities involving a moderate amount of motor response.
‡ Activities involving rather vigorous motor response.

as favorites *varied inversely* with intelligence among the groups. (See table 7.) This phenomenon in reference to "Boxing" is substantiated by two previous studies in which the writers found "Boxing" to be less frequently participated in by gifted boys than by boys selected at random (2).

How can one account for the fact that activities of a motor type are so popular among pupils of low IQ? The following hypotheses may be advanced as possible explanations.

First, dull children are more successful in activities which involve motor response than they are in the activities of the school; they tend to participate voluntarily in activities which are most likely to be attended by undeniable success. Therefore they turn with great frequency to activities of a motor type. Second, dull pupils may fail to do well upon intelligence tests because their spare-time activities cultivate interests and abilities which are peripheral to the material included in intelligence tests, and which therefore militate against maximum success upon the generally-employed intelligence tests. Some evidence in substantiation of both of these hypotheses is to be found from a study of these pupils' reading interests.

BRIGHT PUPILS PARTICIPATE MORE FREQUENTLY IN ACTIVITIES WHICH REQUIRE READING

It is striking that all of the activities requiring reading were more frequently participated in by the bright than by the dull girls. (See table 10.) Although the list of activities more commonly engaged in by the dull girls is a comparatively long one, *no activity requiring reading* is found in the entire list. (See table 9.)

The *attitude* of the bright pupils toward reading is revealed in table 12 which displays the activities most frequently mentioned as favorites and also the activities consuming the greatest amount of time. In tables 7 and 12, it may be seen that "Reading books" is the activity most frequently mentioned as a favorite by the bright boys and also by the bright girls. It is significant also that this activity is the one most frequently mentioned as the greatest time-consumer by both groups of bright children.

Speculation regarding the educational implications of the above findings is interesting. Recent writers have emphasized that one outstanding problem of the modern school is to teach children *to want to read* rather than merely to impart reading

TABLE 9

Play activities more commonly participated in by dull girls than by bright girls

NAME OF ACTIVITY	PER CENT PARTICIPATING			PER CENT DIFFERENCE
	Dull	Normal	Bright	
*Telling or guessing riddles	51	27	27	24
*"Here I come." "Where from?"	32	12	12	20
*Playing school	38	29	20	18
*†Follow your leader	32	18	15	17
Dressing up in older folks' clothing	27	18	11	16
*†Hide the button	18	12	3	15
†Sliding on a playground slide	26	20	12	14
*Checkers	42	35	29	13
Whistling	30	24	17	13
*Telling stories	38	33	26	12
‡Jumping or skipping rope	18	12	6	12
*‡Pillow fights	18	12	6	12
*†London bridge	15	3	3	12
†Hop, skip, and jump	24	17	14	10
*Tin tin	20	11	8	12
*‡Leap frog	12	6	2	10
*‡Hide and seek	24	21	14	10
*Playing Sunday school	12	6	2	10
‡Ice-skating	18	9	8	10
*Going to parties or picnics	21	6	12	9
Making something	47	41	38	9
‡Doing gymnasium work	36	48	27	9
*‡Blackman	11	2	2	9
*‡Drop the handkerchief	15	6	6	9
*†Just playing catch	29	24	21	8
*Going to Sunday school	76	65	68	8
†Playing in the sand	8	5	0	8
*Playing store	15	9	7	8
Pussy wants a corner	8	8	2	6
Number of activities in which the percentage difference between participation of dull and bright girls is 8 or more				28

* Activities involving social participation.

† Activities involving a moderate amount of motor response.

‡ Activities involving rather vigorous motor response.

ability. Professor Morrison has said that in the appraisal of the learning product the vital question is, "What does the pupil do when he is on his own?" (3). As a means of appraising the learning product, Professor Morrison furnishes the pupil with ready access to a liberal amount of material written in French, German, or Latin, and then sees what the pupil does in the absence of supervision or guidance. If the pupil reads, this fact is taken as evidence that the true learning product has been obtained. If the pupil does not read, it is inferred that, regardless of test results, the vital learning product (adaptation) has not been obtained.

If education be thus regarded as a process of broad habit-formation it is evident that bright pupils acquire reading adaptation to a greater extent than do dull pupils. This is shown clearly in the results obtained by the Play Quiz.

One logically asks what effect the differences herein mentioned in reading adaptation have upon intelligence test scores. The two hypotheses presented earlier in the present paper are applicable at this point. It may be that the bright groups tend, like the dull groups, to participate during their leisure in activities which offer the largest opportunity of success. On the other hand the very fact that the bright groups make high scores may be due, in part at least, to their more frequent participation in reading activities, and their less frequent participation in other activities the result of which contribute little to the abilities tested by verbal intelligence tests.

BRIGHT PUPILS LESS INTERESTED IN RELIGIOUS ACTIVITIES

The fact that the dull pupils displayed more interest than the bright ones in religious activities merits attention. In no instance did the bright groups participate more frequently than the dull ones in an activity of a religious nature. The dull pupils not only engaged more often in religious activities, they liked them better and also spent more time therein.

The four activities of a religious nature included in the Play Quiz are: "Going to Sunday school (if you liked it)," "Going to church or to mass," "Playing church," and "Playing Sunday

school." The dull groups participated more frequently than the bright groups in three of these activities; two of the activities were more often mentioned by the dull as favorites. Two of these activities were more frequently designated as the most time-consuming of all activities by the dull. Collectively, the responses to the four items listed above indicate a marked tendency for children of restricted ability to attend and enjoy the activities of the church. Bright children however do not turn so frequently to these activities. If these data are representative of the tendencies of dull and bright children in general one is led to wonder what relationship they may have to the following rather startling statements of Courtis.

> . . . . the effect of Sunday school attendance upon children coming from religious homes is to raise their Stanford (Achievement) scores approximately 5 per cent of the total value. (4)
>
> . . . . a child with an IQ of 100 plus religiousi nfluence would make the same (Stanford Achievement) score as a child with an IQ of 115 without benefit of religion, age and training being the same for the two boys. (5)

The data herein presented by the writers seem to be in direct opposition to the statistically-arrived-at generalization of Courtis.

BRIGHT CHILDREN HAVE A LIVELIER SENSE OF HUMOR

Previous writers have suggested that children of high IQ have a keener sense of humor than do children of average intelligence (6). This study corroborates such reports.[7] "Looking at the daily comic strips," and "Reading jokes or funny sayings," are two activities in which the greatest difference in frequency of participation is found between the dull and the bright boys. These two activities are found also among the first three activities in the list of activities more frequently

[7] The writers are assuming that sense of humor is revealed in the tendency of children to read jokes and look at the comic section of the newspaper. One may logically question the validity of this assumption. The data present significant differences regardless of the interpretation the reader may place upon the activities themselves.

participated in by bright girls than by dull girls. "Looking at the Sunday funny paper," and "Looking at the daily comic strips," are also more frequently mentioned as *favorites* by the bright boys than by the dull ones. The following table displays differences between the groups in these regards.

TABLE B

Per cents by which bright pupils exceeded dull pupils in participating in activities involving a sense of humor

	BOYS	GIRLS
Looking at the daily comic strips	10	31
Reading jokes or funny sayings	11	19

Speculation in reference to the above group differences is interesting. From the psychoanalytic standpoint humor may be thought to involve the release of inhibitions (7). There is some justification for assuming that the bright pupils are restricted in activity participation to a greater extent than are dull ones. For example, table 5 shows that the dull boys participated more commonly than bright boys in activities such as "Whistling," "Just singing," "Chewing gum," etc. It is likely that participation in such activities would occur more frequently among individuals having little consideration for the rights of others, individuals not hampered by the ordinary restraints of society. Bright children appear to be more amenable than dull children to the suggestions and demands of society. Bright children are given therefore fewer channels for energy expenditure and may find indirect gratification through the agencies indicated above. It may be, however, that activities involving a sense of humor are turned to frequently by bright children simply because they offer easily accessible opportunities for inquiring minds to find expression.

BRIGHT PUPILS ARE LESS SOCIAL IN THEIR PLAY

For each child the total number of play activities engaged in during the preceding week was ascertained. The number participated in in company with one or more additional children

was next determined; these were called social activities. The per cent of the total activities that the social activities represented was designated the index of social participation. Thus an index of social participation of 70 indicates that 70 per cent of the activities engaged in by a given child were ones in which one or more other children also took part.

TABLE 10

Play activities more commonly participated in by bright girls than by dull girls

NAME OF ACTIVITY	PER CENT PARTICIPATING			PER CENT DIFFERENCE
	Bright	Normal	Dull	
Looking at the daily comic strips	85	65	54	31
†Climbing porches, trees, fences, posts, etc.	21	9	0	21
Reading jokes or funny sayings	69	51	50	19
Reading other short stories (than magazines)	68	48	51	17
Listening to the victrola	54	65	38	16
Reading or looking at magazines	82	77	69	13
Just imagining things	38	20	27	11
*Watching athletic sports	21	21	11	10
Reading books	85	79	76	9
Attending the theater	47	47	38	9
Number of activities in which the percentage difference between participation of bright and dull girls is 8 or more				10

* Activities involving social participation.

‡ Activities involving rather vigorous motor response.

The median index of social participation was ascertained for each group. The median index of social participation for the dull boys was 61.85; for the bright boys 55.54. Sixty-four per cent of the dull boys reached or exceeded the median index of social participation of the bright group. A similar group difference was found for the girls, the median index of social participation of the dull girls being 61.50, whereas, the median

index of social participation for the bright girls was 50.83. Sixty-seven per cent of the dull girls reached or exceeded the median index of social participation of the bright girls.

TABLE 11

NAME OF ACTIVITY	PER CENT MENTIONING IT			PER CENT DIFFERENCE
	Dull	Normal	Bright	
A. Activities more frequently mentioned by dull girls as favorite activities				
*Going to Sunday school (and liking it)	17	6	5	12
*Card games, such as authors, bridge, whist, etc	9	3	1	8
Looking at the Sunday funny paper	17	12	9	8
‡Doing stunts in the gymnasium	9	3	2	7
*Going to church or to mass (and liking it)	5	6	0	5
Dolls, doll carriages, doll clothes, etc	12	5	8	4
Chewing gum	3	0	0	3
*Telling fortunes or having fortunes told	3	0	0	3
*‡Handball	3	0	0	3
*Checkers	3	6	0	3
*Dominoes	5	2	2	3
*Sleigh-riding	6	5	3	3
B. Activities more frequently mentioned by dull girls as comsuming most of their time				
*Going to Sunday school	6	3	2	4
*‡Swimming	5	0	0	5
*Going to parties or picnics	3	2	0	3
Reading the newspapers	3	0	0	3
Stringing beads	3	0	0	3

* Activities involving social participation.
† Activities involving a moderate motor response.
‡ Activities involving rather vigorous motor response.

Another method for studying the relative sociability of the two groups of pupils is to examine the frequency with which

social activities are mentioned by each group. The writers have attempted to identify the activities which in their judg-

TABLE 12

NAME OF ACTIVITY	PER CENT MENTIONING IT			PER CENT DIFFERENCE
	Bright	Normal	Dull	
A. Activities more frequently mentioned by bright girls as favorite activities				
Reading books	32	23	12	20
Reading or looking at magazines	9	3	0	9
†Coasting on a sled	12	9	6	6
†Playing the piano (for fun)	14	6	8	6
Just singing	6	2	0	6
‡Swimming	11	9	6	5
*Going to parties or picnics	5	0	2	3
‡Folk dancing	5	3	2	3
Attending the theater	9	6	6	3
*Visiting or entertaining company	8	3	5	3
*Social clubs or being with the gang	3	6	0	3
Painting with water colors	3	3	0	3
†Sewing, knitting, crochetting, etc. (for fun)	11	8	8	3
B. Activities more frequently mentioned by bright girls as consuming most of their leisure time				
Reading books	32	17	9	23
Drawing with pencil, pen, chalk, or crayon	5	0	0	5
†Playing the piano (for fun)	5	6	2	3
*Writing letters	3	0	0	3

* Activities involving social participation.
† Activities involving a moderate amount of motor response.
‡ Activities involving rather vigorous motor response.

ment would be most likely to involve social situations. They have designated these with an asterisk (*). (See tables 5 to 12 inclusive.) The following tabular arrangement displays the

differences between the groups in frequency of participation in these social activities.

TABLE C

*The interest of dull versus bright pupils in activities involving social situations**

	NUMBER OF BOYS		NUMBER OF GIRLS	
	Dull	Bright	Dull	Bright
Participated in	17	2	19	1
Favorite activities	5	7	8	3
Most time-consuming	4	1	3	1

* The above table is to be read as follows: Of the activities more frequently engaged in by dull than by bright boys, the group difference being 8 per cent or more, 17 involved social situations. Of the activities more frequently mentioned as favorites by the dull boys, the group difference being 3 per cent or more, 5 involved social situations. Of the activities more frequently mentioned as most time-consuming by the dull boys, the group difference being 3 per cent or more, 4 involved social situations.

It is apparent that the play activities of dull groups are more likely to involve social contacts than are those of the bright groups. This fact becomes even more conspicuous when it is recalled that reading activities are especially preferred by the bright children.

In seeking an explanation for the relatively great sociability of the dull an hypothesis previously presented in the present paper may be used again. It seems likely that many group activities are of such a nature that relative inability to do school work does not preclude equal opportunity for success therein. This is clearly true for such an activity as "Playing school." In a previous article the writers showed that negro children participate in this activity more commonly than white children (8). Since negro children are conspicuously unsuccessful in academic endeavor, it seems paradoxical that they should play school more frequently than their more successful classmates. One would naturally expect the negro to turn during his leisure hours to activities in which he can succeed best and

to avoid those for which he manifests restricted ability. The writers suggested that negro children play school more commonly than white children because this activity symbolizes knowledge, power, and prestige which they are unable to achieve in the world of actuality. This form of make-believe play is probably a compensatory mechanism for negro children.

One may assume likewise that in some instances "Playing school" is a compensatory mechanism for white children also. In securing data for a Master's thesis on *Play Activities and School Marks*, Shikles found that girls who received high marks in their school work participated less commonly in this activity than girls who received average or low marks (9).[8] In another study the writers found that girls retarded in their school progress participated in this activity more commonly than accelerated girls, that retarded school girls mentioned it more frequently as a favorite activity, and that they also mentioned it more frequently as consuming much of their leisure (10). Dull girls also were found to take part in this activity more frequently than bright girls. It may be therefore that "Playing school" affords satisfaction vicariously for those who do least well in school.

Langfeld points out that other types of play too originate in the desire for compensatory gratification.

> . . . . the child constantly finds itself in situations which call for a nicer adaptation and adjustment than it has at its command. It therefore "makes" an environment for itself, commensurate with its abilities. We are accustomed to speak of such activities as play. What the form will be depends upon conditions. The children of the most primitive peoples have had to be content with the simplest products of the imagination. The child of today has many forms of play provided for it. There is also the added fact that the range for imitation has become increasingly great. Imitation itself can be explained as a natural effect of the surroundings, as can also the various important motives such as rivalry, emulation, etc. According to this description, it is not an instinct of play that develops certain situations, but the

[8] Since "Playing school" is primarily a girls' activity, the group differences are more pronounced for girls than for boys.

interaction of organism and environment that develops a certain activity which has been termed "play."

That play results from this conflict of the desire early developed by the lessons of experience to adapt ourselves to the many situations of life, and to the lack of ability to do so, is seen especially in the case of the delicate child who, instead of playing with boisterous and vigorous companions, withdraws to a world of its own imagination, peopled with fanciful playmates who speak a language probably only partly intelligible to itself. Such a world becomes so real to it that it is only from another's point of view that the activity is called play. For the child the playmates exist, and so vividly are they present that often there is a howl of real anguish if a "grown-up" inadvertently sits upon a chair already occupied by one of its imaginary companions. (11)

The human organism tries out numerous modes of behavior until satisfyingness is achieved to some degree. For the dull child social activities offer easily accessible and intensely satisfying channels for energy expenditure. In many of these activities abstract intelligence is not so important or necessary as in other types of endeavor, notably schoolwork. In these activities the dull child finds ready success and satisfyingness precluded in reading activities. The dull child's frequent participation in motor activities may be due to a similar desire for success, recognition, and satisfyingness.

It might be said also that the bright pupil's excessive interest in reading is a means of escape also for it is evident that reading affords satisfaction vicariously. Since dull children often play school, and since the bright children engage frequently in reading activities, it seems that each group turns to the types of satisfying activities which are most easily accessible.

It is of course impossible to explain all of the play activity of any group of individuals by a single or simple formula. Play activity is a function of multitudinous variables and is not to be explained easily. The writers suggest the preceding hypothesis as one possible explanation for certain types of play response.

It is sometimes assumed that school work should be based largely upon the child's "felt need." It seems reasonable to assume that the type of activity in which the child spontane-

ously and voluntarily participates is a reflection of his felt need. The dull child probably feels a conspicuous need for and active interest in plays and games which provide: (1) An abundance of motor response, (2) much social participation, and (3) little or no reading. It is unsound to adopt *in toto* the hypothesis that school work should be based upon the child's felt need. If the preceding hypothesis be followed to its logical conclusion it would follow that opportunity to chew gum should be provided for some of the dull boys studied by the writers since 83 per cent of these boys indicated that they had participated in this activity at the time of the investigation. The felt needs of the child are of course in themselves inadequate criteria for purposes of curriculum construction. Indeed, the felt need itself sometimes may be indicative of the fact that the child has been permitted to follow his individual whims to excess and that he needs guidance. It is obvious that the estimates of his parents and teachers in reference to the child's *actual* needs must be sought and considered in evaluating.

It is of course true that academic attainment would be stamped in best by appealing to the child's intrinsic interests. It seems therefore that recognition and utilization of the dull child's fondness for social activities might operate as an effective incentive in motivating him to give intense effort to his school work. The dull child's inordinate fondness for motor activities might be used similarly.

Not only should the school recognize the spontaneous interests of the child in motivating classroom endeavor; it should provide also for the maximum development of the abilities revealed through the interests of the child, for interests are sometimes symptomatic of ability (12). If interests are assumed to be symptomatic of ability, the relatively great sociability of the dull pupils may be indicative of superior potentiality in this regard. Attention might well be directed toward turning the excessive sociability to good account in school activities. The fact of unusual sociability might prove helpful also in vocational guidance. Some might assert that dull pupils are retarded in their school progress because of the fact

that their social propensities have already received over-stimulation. Regardless of the interpretation one places upon the data an evaluation of *each* child's sociability should form a recognized part of a careful accounting program.

It is possible that the dull child's social development makes up in part at least for his pedagogical retardation; the validity of this assumption will need to be substantiated by subsequent investigation. There is need for careful case studies of the social development of children of low IQ. Such studies will need to follow the child's development from year to year, and the later success in the game of life will need also to be taken into account.

Certainly, the child of low IQ is a serious problem to the conscientious educator. The school should make an attempt to salvage him through appeal to his interests and abilities. The writers have shown that the dull child displays an unusual interest in motor and social activities. These facts should be of conspicuous value to the educator, for a sane and successful educational program must recognize the interests and the abilities of the child. Such recognition must be tempered of course by sound adult judgment of what the child *actually* needs. In this way only can the school be made to yield its maximum returns.

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A COMPARISON OF FIVE TYPES OF OBJECTIVE TESTS IN ELEMENTARY PSYCHOLOGY

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An examination of one hundred questions based on the text of Woodworth's Psychology was devised and given in the fall term of the college year to twenty-one classes pursuing the subject in Iowa State Teachers College. The examination was given in five different forms, namely, the recall or completion test, the five response, the three response, the two response, and the true false tests. On the first day of the experiment all students took the recall test which was to be the criterion against which all the other forms were to be measured. On the second day the group was divided into four sections, each taking one of the four other tests which were the same as the recall test in content but differing in form. The division into four groups was made in order to avoid the effect of familiarity with the test which would be inevitable if all took the five forms of the test. Furthermore two days of the tests could be administered without encountering any of the element of expectation or special preparation on the part of the students.

A careful check on the time required by each student to complete each type of test was made by each instructor in charge in the classroom. In each room where the test was given there was placed on the blackboard in front of the class a schedule to indicate the time elapsed since the beginning of the test. This schedule was graduated to half-minute intervals, and at the expiration of each half-minute interval the top number of the schedule was erased. Each student was instructed to indicate at the end of his paper in a space provided the time taken to complete the test, which would be the top number of the schedule.

Each test was divided into two forms, Form A, consisting of the first fifty questions, and Form B, consisting of the second fifty questions, the division being made in order that correlations might readily be made to determine the reliability of the tests.

Each test was scored with a key and the score for each paper was the number of questions answered correctly. The score for Forms A and B and the total score for Form A plus Form B were set down separately. Later the scores for these same forms as determined by the correction formula

$$\text{Score} = R - \frac{W}{N-1}$$

were calculated and set down separately in order to provide a basis for comparing the reliability of the corrected and the uncorrected scores.

The term grade for the course as given by each instructor to each pupil was ascertained and set down in a separate column. Seven hundred and forty-seven students furnished complete data. About fifty papers had to be rejected because the test of either the first or the second day was missing or the term grade given by the instructor was lacking.

A sample of the questions follows:

Recall:	A synapse is a junction between two	———
Five Response:	A synapse is a junction between two (1) dendrites, (2) axones, (3) muscles, (4) neurones, (5) bones.	———
Three response:	A synapse is a junction between two (1) dendrites, (2) neurones, (3) axones	———
Two response:	A synapse is a junction between two (1) neurones, (2) dendrites.	———
True False:	A synapse is a junction between two dendrites.	True False.

In the Recall test the answer was written in the space to the right; in the five, three and two response tests the number of the answer chosen was written in the space to the right; and in the true false test the answer chosen was underlined.

Table 1 shows the reliability of each form of the test with uncorrected scores: also the reliability as determined by Brown's Formula for a test of double the length of the present calculation. Contrary to the findings of other studies, the recall test in this study does not give the highest correlation. The diversity in method of teaching and difference in emphasis on items of content may be responsible for the lower reliability, as there were ten different instructors, with little agreement as to method or content except the general understanding that each was expected to cover the text. In some cases the material on sensation was given much less attention proportionately than other subjects and consequently many of the most objective items possible for the tests had to be left out altogether.

TABLE 1

Reliability of Form A vs. Form B uncorrected for chance

TYPE	NUMBER OF CASES	FIFTY ITEMS	ONE HUNDRED ITEMS
Recall	747	0.603	0.752
Five Response	182	0.680	0.809
Three Response	188	0.624	0.768
Two Response	188	0.477	0.646
True False	189	0.602	0.751

Table 2 shows the effect on the reliability which resulted from correcting the scores according to the formula

$$\text{Score} = R - \frac{W}{N-1}$$

The corrections give lower reliability in three cases and higher in one, but the differences are inconsiderable. This would seem to lead to the conclusion that the change in reliability is not worth the labor in correcting the scores. The differences in the reliabilities for the five forms of the examination when the total scores for the one hundred questions given the first day were correlated with the total scores for the one hun-

dred questions given the second day were even less than those shown above for the scores of Form A versus Form B, except that the True False was slightly improved by correcting the scores. The same result held true when the total scores of the tests were correlated with the term marks given by the instructors.

More interesting and more certain in their outcome are the data for the time element in the tests. The exact time for each student in each test was ascertained; then the totals and

TABLE 2

TYPE	NUMBER OF CASES	RELIABILITY OF CORRECTED SCORE
Five response	182	0.647
Three response	188	0.619
Two response	188	0.527
True False	189	0.555

TABLE 3

TYPE	NUMBER OF CASES	TOTAL MINUTES	AVERAGE TIME
Recall	747	26,770	35.83
Five response	182	4,649	25.54
Three response	188	4,043.5	21.50
Two response	188	3,699.5	19.67
True false	189	3,473.5	18.37

averages for the groups in each type of test computed and shown in table 3. The studies of Ruch-Stoddard and Brinkley yield substantial agreement this time study in respect to the relation of the recall test to the true false test, all finding that practically twice as many questions per unit of time can be answered by the true false method as by the recall. While other studies have shown a greater difference between the reliability of the recall test and the true false test than the present study shows, yet the additional fact that much more ground can be covered in a given length of time has failed to

receive emphasis. This is all the more important because the increase in the length of the test is attended by an increase in the reliability of the test. Reason therefore directs that the true false test should have equal standing with the other tests on the ground of reliability per unit of time and preferred standing on the ground of testing a greater amount of material per unit of time. Table 4 shows the number of items that can be answered per unit of 100 recall items. The tendency here is obvious and calls for higher esteem for the true false test as an instrument to get large amounts of work done in limited

TABLE 4

STUDY	RECALL	FIVE RESPONSE	TRUE FALSE
Toops	100	123	192
Ruch-Stoddard	100	117	183
Ruch-Charles	100	140	189

TABLE 5

Number of items of each type which can be answered per minute

STUDY	RECALL	FIVE RESPONSE	TRUE FALSE
Ruch-Stoddard	5:00	6:00	10:00
Brinkley	1:43	1:85	3:23
Ruch-Charles	2:80	4:00	5:50

time. The agreement is again substantial in this case and confirms the claim for economy in respect to the time element. If any attack is to be made successfully on the true false test it must be made on other grounds than economy of time.

By the use of Brown's formula the reliability of a test for any given increase of length can be computed. In table 1 the predictive values are given from the uncorrected scores for a similar test of twice the length used here. Correlations of the total scores for the five, three, two response, and the true false tests versus the total scores for the same students in the recall

test were computed and in every case the coefficients were higher than in the case of correlations of Form A versus Form B, the advantage ranging from 0.034 to 0.178 in the eight cases considered. The actual value thus confirms the theoretical value and points toward the use of the longer test wherever any one of these five types of objective tests is employed.

Correlations with the instructors' marks for the term were all low and revealed only a corroboration of other studies which have found lack of correspondence between objective and subjective measures. In thirteen cases considered only one showed a coefficient as high as 0.40, while the total range lay between 0.213 and 0.408.

OVERSTATEMENT IN THIRD-GRADE CHILDREN

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Psychologists interested in devising character tests have centered their efforts upon tests for children of about eleven to fourteen years of age. It appears desirable, however, in view of the marked influence which early training is alleged to exert upon character, to develop tests suitable for children of earlier ages. The writers have made some attempt, consequently, to devise or to adapt tests to children of nine years of age and younger, and to study the validity of the tests at these earlier ages.[1] The object of the study here reported was to determine the feasibility of adapting the overstatement test to children of about eight or nine years of age. An overstatement test, composed of an "assertion" test and an "execution" test, was devised for children of the mental level represented by the third grade of the public schools and then tried out on a group of 271 children, composing nine third-grade classes located in five schools of the cities of St. Paul and Minneapolis. The group ranged in CA from 7 years and 0 months to 11 years and 6 months, and averaged 8 years and 5 months.

On the basis of two preliminary investigations in other schools an assertion test originally containing 100 questions was reduced to one containing 60 questions. This reduction

[1] See Woodrow, H., A Picture-Preference Character Test, J. Educ. Psychol., 1926, vol. 17, 519–531, and Woodrow, H., and Bemmels, V., Overstatement in Pre-School Children, J. Educ. Psychol., 1927, vol. 18, 239–246.

was accomplished by discarding those questions which with respect to frequency of overstatement showed the least differentiation between children rated high in general character and those rated low. The 60 questions retained constituting that part of the overstatement test called the assertion test were read to the pupils at two sittings one week apart, 30 questions at a sitting. It was thought that the children would become tired and restless if all 60 questions were given at one time. The instructions to the children were as follows: "I am going to ask you some questions in order to find out who in your class knows, or can do, the greatest number of things; and I am going to give that person a box of candy as a prize. On the sheet of paper I have just given you, you will write 'yes' if you can answer the question or can do the thing I ask you, and 'no' if you cannot."

One week after giving the last part of the assertion test, the experimenter met the class a third time to give the execution test, a test to determine the truthfulness of the child's assertions. Fifteen of the questions of the assertion test mainly relating to the child's personal and physical characteristics were of such a nature that no test was necessary to determine the truthfulness of the child's answers. They were such questions as these: Are you always unselfish? Always polite? Always brave? Can you run faster than anybody in your school? Have you ever read "Black Susan" (a fictitious title)? Obviously, to any of these questions there is only one answer that would be strictly true. For each of the remaining forty-five questions a test exercise was provided in the execution test. As in the case of the assertion test, the questions were read to the children, who wrote their answers after numbers printed upon the distributed blanks.

The overstatement test was scored in accordance with Raubenheimer's method by dividing the total number of assertions of a subject by the total number of his successes in the execution test. The smaller the resulting quotient, the better the score. Cady's method of taking the difference between assertion and execution scores was also tried, but was not

used because it resulted in lower validity and reliability coefficients (calculated by the rank-order method). Goodenough's formula was also tried. By this formula,[2] which is intended to eliminate any effect upon the overstatement score exerted by differences in knowledge on the part of the subjects, the difference between the assertion and execution scores is divided by the difference between the number of items in the test and the execution score. The application of this method to the present data lowered the correlations with the ratings, and of more consequence lowered even more the partial correlations calculated with MA constant. It appeared, consequently, that with the present data the proper scoring method was the ratio method, the method which yielded the highest validity and reliability coefficients and the one which, with MA constant, yielded the highest correlations with the ratings. It is not contended that the scores may not be influenced by differences in the knowledge of the subjects, but in so far as such differences operate independently of differences in MA it is not clear to what extent their effect (which, in the present instance, partial correlations indicate to be slight) is to be regarded as spurious.

The overstatement test used was the following:

(A) Assertion Test. Part I

Starred items (*) are those for which no execution test is necessary.

1. Do you know the multiplication table of 7's?
2. Do you know the name of the city which is the capital of this state?
3. Do you know what one-third of 39 is?
4. Do you know how many days there are in the month of July?
5. Do you know how many nickels there are in a half dollar?
6. Do you know how many players there are on a football team?
7. Do you know how many degrees there are on a Fahrenheit thermometer?
8. Do you know the name of the man who invented the telephone?
9. Do you know the name of the largest planet?
10. Do you know the name of the poet who wrote "The Children's Hour"?

[2] Genetic Studies of Genius, edited by L. M. Terman, 1923, Vol. I, p. 505.

11. Do you know the name of the widest river in the world?
12. Can you write any number up to 10,000?
13. Do you know how much one green postage stamp costs?
14. Do you know how many cards there are in a deck?
15. Can you tell time?
16. Do you know what color the wings of an oriole are?
17. Do you know where the WEAF radio station is?
18. Do you know the name of the third month of the year?
19. Do you know what is the regular number of innings in a baseball game?
20. Do you know how the Indians make flint fire?
*21. Have you ever read "The Little Brown Wren"?
*22. Do you know how to drive an automobile all by yourself?
23. Can you spell the word *harsh?*
24. Can you spell the word *Mississippi?*
*25. Are you always unselfish?
*26. Are you either a Boy Scout or a Camp Fire Girl?
*27. Are you always polite?
*28. Are you always brave?
*29. Have you ever been afraid?
30. Can you subtract 4 from 30?

(B) Assertion Test. Part II

1. Do you know what country the city of Paris is in?
2. Do you know the name of the highest mountain in the world?
3. Do you know the name of the Governor of this state?
4. Do you know what baseball team last won the national baseball championship?
5. Do you know how much a quart of water weighs?
6. Do you know how to spell your teacher's name?
7. In football do you know what a touchdown scores?
8. Do you know what day of the month Hallowe'en comes on?
9. Do you know how many days it takes the earth to move around the sun?
10. Can you write the abbreviation for Rural Free Delivery?
11. Do you know how many days there are in the month of March?
12. Do you know the name of the author who wrote "Mrs. Wiggs of the Cabbage Patch"?
13. Do you know how many inches there are in a yard?
14. Do you know what state Mt. Ranier is in?
15. Do you know from what country silk worms first came?
16. Do you know how much one red postage stamp costs?
17. Can you spell the word *another?*
18. Do you know how many Indians there are in the United States?

19. Do you know the name of the man who was the first president of the United States?
20. Do you know how to play the card game called bridge?
21. Do you know how many players there are on a basketball team?
22. Have you ever read "Five Little Peppers"?
*23. Have you ever read "Black Susan"?
*24. Can you lift a 100 pound sack of sugar?
*25. Can you stay under water five minutes?
*26. Are you always obedient?
*27. Can you chin yourself 50 times?
*28. Are you always generous?
*29. Are you ever bashful?
*30. Have you ever hiked 30 miles a day?

(C) Execution Test

1. What is 7×9? 7×6?
2. What is the name of the widest river in the world?
3. What is one third of 39?
4. How many days are there in the month of July?
5. How many nickels are there in a half dollar?
6. How many players are there on a football team?
7. How many degrees are there on a Fahrenheit thermometer?
8. What is the name of the man who invented the telephone?
9. What is the name of the largest planet?
10. What is the name of the poet who wrote "The Children's Hour"?
11. What is the name of the widest river in the world?
12. Write the number 9,846.
13. How much does one green postage stamp cost?
14. How many cards are there in a deck?
15. Without saying it out loud, write down what time it is now.
16. What colors are the wings of an oriole?
17. Where is the WEAF radio station?
18. What is the name of the third month of the year?
19. What is the regular number of innings in baseball?
20. What two things do Indians strike together to make flint fire?
21. Write the word *harsh*.
22. Write the word *Mississippi*.
23. Subtract 4 from 30.
24. In what country is the city of Paris?
25. What is the name of the highest mountain in the world?
26. What is the name of the Governor of this state?
27. What is the name of the team that last won the baseball championship?
28. How much does a quart of water weigh?

29. Write your teacher's name.
30. How much does a touchdown score in football?
31. On what day of the month does Hallowe'en come?
32. How many days does it take the earth to move around the sun?
33. Write the abbreviation for Rural Free Delivery.
34. How many days are there in the month of March?
35. What is the name of the author who wrote "Mrs. Wiggs of the Cabbage Patch?"
36. How many inches are there in a yard?
37. In what state is Mt. Ranier?
38. What is the name of the country that silk worms first came from?
39. How much does one red postage stamp cost?
40. Write the word *another*.
41. How many Indians are there in the United States?
42. What is the name of the man who was the first president of the United States?
43. What are the honors in bridge?
44. How many players are there on a basket ball team?
45. In the book called "Five Little Peppers" what is the name of the oldest Pepper girl?

The overstatement scores were correlated with CA, MA, school achievement and teachers' ratings with respect to general character. The teachers were given no definition of general character, but were asked to define it in their own way. They were, however, cautioned to be careful to ignore general intelligence in so far as compatible with their understanding of the term character. That intelligence influenced the teachers' rankings only to a very limited extent is shown by the fact that, on the average, the correlation between teachers' rankings and MA was only +0.25. From 2 to 4 teachers ranked the children of each school class. In the Minneapolis schools, only 2 rankings could be obtained, one by the teacher and one by the principal. In the St. Paul schools, however, where the teaching is to some extent organized with respect to school subjects, rankings were obtained from 3 or 4 teachers.

In one Minneapolis school (classes $M1_1$ and $M1_2$) a different criterion was used. In this school an experiment of wide-spread interest upon education in character has been carried on for the past four years. The only marks given are marks in the following character traits: reliability, obedience, social

attitudes, self control, punctuality, thrift, initiative, and deportment. The teachers are given a booklet in which the meaning of each trait is defined through concrete illustrations of the types of behavior it includes. The marks are made on a scale of five steps designated by letters. In order to determine the correlation between these character marks and overstatement scores, the marks for each character trait were changed from letters to numbers by substituting for the letters A, B, C, D, and E the numbers 1, 2, 3, 4, and 5, respectively. The sum of the numerical scores was taken as a rating in general character. These ratings were then arranged in rank-order.

The coefficients of correlation between the rankings of each pair of raters were calculated, and were found to vary from +0.48 to +0.83. The average of these coefficients of reliability—24 in number—was +0.69. The averages of the correlations between the raters of any one school class varied from +0.66 to +0.74, with the exception of one Minneapolis class, with but two raters, whose rankings showed a correlation of only +0.48.

To obtain an index of the reliability of the overstatement test, scores based on the first half of the test were correlated with scores based on the second half. Such correlations were calculated for each class, as well as for the group as a whole. The average reliability coefficient calculated by the Brown-Spearman formula for the 9 classes was +0.62; the coefficient for the entire group of 271 was +0.71.

CA was found to have practically no relationship to overstatement scores, in the group here considered, the correlation between overstatement scores and CA for the entire group of 271 children being +0.03.

MA was measured by means of the Otis Group Primary tests. The correlations between MA and both overstatement scores and the rankings with their probable errors are shown in table 1. It will be observed that intelligence shows but a low correlation on the average with either the overstatement scores or the character rankings. The average correlation

between MA and overstatement score is +0.29; between MA and rank in character, +0.25. Clearly in the present instance both the overstatement scores and the character rankings are for the most part dependent upon something else than intelligence.

In view of the low reliability both of the overstatement scores and of the teachers' rankings, the correlations obtained between the overstatement scores and the rankings are surprisingly high. As shown by table 2, the validity coefficients without correlation for attenuation averaged +0.50; and when calculated with MA constant, +0.48. Thus the partial coeffi-

TABLE 1

Rank-order coefficients of correlation with mental age

SCHOOL	OVERSTATEMENT	CHARACTER RANKS	N
M_1	+0.36 ±0.12	+0.36 ±0.12	28
M_2	+0.05 ±0.15	+0.11 ±0.15	22
M_3	+0.02 ±0.12	+0.49 ±0.09	32
$M1_1$	+0.40 ±0.11	−0.20 ±0.14	26
$M1_2$	+0.07 ±0.12	+0.35 ±0.09	46
SP_1	+0.36 ±0.12	+0.29 ±0.14	27
SP_2	+0.41 ±0.10	+0.46 ±0.12	32
SP_3	+0.47 ±0.10	+0.27 ±0.14	31
SP_4	+0.44 ±0.10	+0.14 ±0.14	27
Average	+0.29	+0.25	271 (total)

cients of correlation with MA constant were practically the same as the original coefficients. Clearly on the average the correlations between the ratings and the overstatement scores were not due to any appreciable extent to the influence of the differences in intelligence existing among the children. The correlations obtained in each school class and their probable errors are given in table 2.

It was desired to determine the relationship between overstatement scores and scholastic achievement, but the only data obtainable on achievement without undue interference with school routine were those furnished by the schools themselves.

These consisted in two Minneapolis schools of the scores in two standardized tests, the Monroe Reading Test and the Minneapolis Arithmetic Test, and in the four St. Paul schools of a

TABLE 2

Rank-order coefficients of correlation between amalgamated character ranks and overstatement scores

See table 1, column "N," for number of children in each class

SCHOOL	SIMPLE	PARTIAL (MA CONSTANT)
M_1	+0.63 ±0.08	+0.57 ±0.09
M_2	+0.74 ±0.06	+0.74 ±0.06
M_3	+0.36 ±0.11	+0.40 ±0.10
$M1_1$	+0.56 ±0.09	+0.71 ±0.07
$M1_2$	+0.51 ±0.08	+0.52 ±0.07
SP_1	+0.44 ±0.10	+0.38 ±0.11
SP_2	+0.32 ±0.12	+0.16 ±0.11
SP_3	+0.56 ±0.08	+0.51 ±0.09
SP_4	+0.37 ±0.11	+0.35 ±0.11
Average	+0.50	+0.48

TABLE 3

Correlations between achievement scores and overstatement and mental age scores

SCHOOL	OVERSTATEMENT	MA
M_1	+0.52 ±0.11	+0.41 ±0.11
M_3	+0.25 ±0.11	+0.21 ±0.11
SP_1	+0.09 ±0.13	+0.48 ±0.11
SP_2	+0.46 ±0.11	+0.62 ±0.09
SP_3	+0.64 ±0.06	+0.28 ±0.11
SP_4	+0.40 ±0.12	+0.40 ±0.11
Average	+0.39	+0.40

mark for all of the academic subjects combined, called a proficiency grade and given on a scale of four steps, designated by the letters B, C, D, and E. The achievement scores from the Minneapolis schools were changed into sigma scores and

the different achievement scores for each child were amalgamated so that each child could be given a single score. These scores were then ranked and correlations were calculated by the rank-order method. The St. Paul scores were also changed from letters into sigma scores on the assumption of a normal distribution and correlations then calculated by the product-moment method.[3] The correlations obtained with the achievement scores of the six classes are given in table 3. The average coefficient of correlation shown by the achievement scores with the mental age scores was only +0.40; with overstatement scores it was substantially the same, +0.39.

In the case of the two Minneapolis schools correlations were calculated also between the rankings and achievement by the rank-order method. The coefficients obtained were +0.43 and +0.32, averaging +0.37. On account of the questionable assumptions necessary no attempt was made to determine the correlations between the character rankings and the proficiency letter-grades furnished by the St. Paul schools. The character rankings could not be used for the calculation of product-moment coefficients, and, on the other hand, the proficiency grades could not very well be used in the calculation of rank-order coefficients on account of the large number of ties. In the case of the two Minneapolis schools the partial correlations between overstatement scores and the ratings with achievement scores constant were found to be +0.58 and +0.29, as compared with the simple correlations between ratings and overstatement of +0.63 and +0.36 respectively. The average of the two partial coefficients between overstatement scores and ratings with achievement constant was thus +0.44; while that of the simple coefficients was +0.50.

The preceding data are perhaps not altogether easy to interpret, but it may be worth while to call attention to certain points. Of course it is not here contended that the teachers' character rankings constitute valid measures of character. There is no evidence of lack of validity, however, to be found

[3] See Kelley, T. L., Statistical Method, 1923, 167–171.

in the correlations between the rankings and either intelligence (average = +0.25) or achievement (average, two classes, +0.37). There appears to be no reason why true measures of character might not yield as high, or even considerably higher, correlations. The writers are of the opinion that experienced city school teachers understand fairly well what constitutes good and bad character in children, and that their estimates of character constitute a tolerably fair criterion, perhaps as good a one as it is possible at present to obtain. This opinion is of course simply a hypothesis the truth of which cannot be proved.

Even admitting this hypothesis, however, it may well be argued that validity coefficients averaging +0.50 do not establish any great value for the overstatement test. This must be conceded. On the other hand, the correlations shown by the overstatement scores with the rankings do not appear to be due primarily to the fact that both overstatement scores and the rankings are correlated with achievement and intelligence; the partial correlations with either achievement or intelligence constant result in too small a decrease in the original coefficients to permit such an interpretation. The overstatement test appears to be measuring something which is primarily neither intelligence nor achievement, and the test scores correlate to the extent of +0.50 with rankings which likewise appear to be primarily a matter of neither intelligence nor achievement. We believe these rankings to be based upon a set of characteristics allied to what is ordinarily understood by the term character as used when teachers speak of children as of good or bad character. While what is thus understood is undoubtedly vague and not the same for all teachers any more than it would be for all psychologists, it is obvious that there is a certain general agreement as indicated by the correlations between the rankings of different raters. The overstatement scores correlate +0.50 with teachers' judgments of this vaguely understood and diversely appraised set of characteristics. Is this correlation sufficient to lend value to the test? In answering this question it should be remembered that the overstatement test was originally proposed by Voelker as one of a

battery of ten tests and that it has since, nearly always, been used as one of a battery. And what existing battery of tests designed for the measurement of any complex trait does not contain component tests which correlate less than +0.50 with any obtainable criterion of the trait or set of characteristics tested by the battery as a whole? Undoubtedly much further work is needed in the analysis of the overstatement test, but it is believed that such results as are here presented while affording ample justification for this further work at the same time indicate the desirability of seeking other tests which will show as high correlations with teachers' rankings as the overstatement test; and it is the writers' conviction that when several such tests are available, providing they do not correlate higher than +0.30 or so with each other, the entire battery should not only prove useful but should constitute one of the distinct achievements of the psychological testing movement.

SUMMARY

An overstatement test intended for third-grade children was devised and given to 271 children composing 9 third-grade classes of city schools. In addition to the children's overstatement scores, the data include character rankings, intelligence and achievement scores, and CA's.

The following results were obtained:

1. The average reliability coefficient for the teachers' character rankings was +0.69.

2. The average correlation between teachers' character rankings and MA was +0.25.

3. The average correlation between character rankings and school achievement (calculated only for 2 classes) was +0.37.

4. The Brown-Spearman reliability coefficient for the overstatement test, calculated from overstatement scores based on the first and second halves of the test was, for the entire group of 271, +0.71; the average of such correlations calculated for each of the 9 classes was +0.62.

5. The average correlation between overstatement scores and MA was +0.29; the correlation between overstatement scores and CA for the group as a whole was only +0.03.

6. The validity coefficients, that is, the coefficients of correlation between the teachers' character rankings and the overstatement scores, varied from +0.32 to +0.74, and averaged +0.50.

7. The validity coefficients with MA constant (partial correlations) averaged +0.48.

8. The validity coefficients with achievement constant (calculated for only 2 classes, for which the simple validity coefficients averaged +0.50) averaged +0.44. It will be observed that keeping intelligence constant lowered the average of the validity coefficients only 2 points; keeping achievement constant (2 classes), lowered it 6 points.

9. In the case of 6 classes for which achievement records were available the average correlation between achievement and MA was +0.40, and that between achievement and overstatement, +0.39.

TRAINING IN THE PUBLIC PRESENTATION OF A SCHOOL EXERCISE: A STUDY IN SCHOOL MORALE

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One of the most conspicuous parts of a teacher's work from the standpoint of the community at large is the presentation of a public entertainment of some sort to which the patrons of the school are invited. These public performances are of several kinds such as an entertainment at Christmas time, a special assembly on some patriotic occasion, like Washington's Birthday; and in the spring, a school pageant or May Day Festival. That teacher-training institutions need to give specific instruction in effective and mentally hygienic methods of organizing and conducting such school entertainments goes without saying. Yet studies of methods of training teachers in this type of school procedure have been up to the present all too few. Intensive studies of the morale of institutions during the preliminary training for such exercises are also needed. So many times the rush and nervous excitement so color the time of preparation for such an event as to raise in the minds of parents as well as educators serious questions regarding the basic worth of these functions.

The study which follows was made during the preparations for the giving of a large pageant at a teachers' college having a student body of three hundred and fifty and an equally large training school population. All students of the college and of the training school were required to take part. From the standpoint of publicity the students and faculty were almost unanimous in considering the pageant a valuable form of advertising. However, the critical analysis which follows concerned as it is with the conditions during the period of the

preparation before the actual public performance shows that other considerations in this type of school exercise besides the mere successful *result* are of vital importance. For from the standpoint of students, especially prospective teachers, the *process of preparation* is of more significance than the resulting performance.

The process of preparation is significant from another point of view. Teacher-training institutions are a center of radiation for all types of school procedures. Stress pageants in teachers' colleges, for example, and, as the teachers go forth, it will not be long before other institutions in the state are introducing them. It is not unlikely even that pageants become a prominent feature of the activities of grade and high schools throughout the whole state. It is therefore a moral obligation on the part of faculties of teacher-training institutions to be observant of their own procedures and to diagnose early any latent weaknesses in them; because as they direct their teacher-in-training so will the latter ordinarily go forth into the schools and direct similar exercises with children. The amount of fatigue and worry from which little children are apt to suffer if poorly directed during the preparation of such school exercises raises a serious problem in mental hygiene.

The source of the data reported here was a questionnaire given to the students and faculty of the institution at the beginning of the pageant practice and kept by them in diary form. The questionnaire asked for information in regard to such matters as classes or conferences missed or interfered with, courses changed, opinions of the values of the pageant, such as its service as school advertising, the correlations worked out with various phases of the curriculum, etc. The replies are incorporated in the following discussion. Nineteen of the thirty faculty members and 276 of the 350 students made returns.

The first question raised is naturally, how much school time did the pageant take? Two full afternoons of school time were taken, one for dress rehearsal, the other for the giving of the pageant. These afternoons taken together are estimated as five class hours of school time. Besides these afternoons there were

other losses of class hours by individual students during the six-week period required for preparation. Extreme instances of loss of time occurred in the Home Economics Department. If the Home Economics group is eliminated and an average taken of the rest, it was found that students lost on an average 3.7 hours, exclusive of five hours lost on the two afternoons devoted to dress rehearsal and performance. This brings the total to an average loss by students of 8.7 hours. If these hours are analyzed on the basis of subjects exclusive of Home Economics, Art, Girl's Baseball, Composition, Drill, Manual Training, Music, and Teaching, there was little interference with class room work.

Second, with regard to interferences with courses, there were instances reported of critic teachers' absences from classes in which student teachers were teaching, and from conferences with them, sometimes even when new work was to have been planned. Playground instruction and supervision was discontinued for some students during a period of three weeks. Music supervision was likewise seriously interfered with. Subjects like music, physical training, home economics and art were modified so as to be utilized for pageant purposes during the weeks of preparation.

Third, how much of the student's personal time did the pageant take? In an institution where the course is as difficult and extensive as the ordinary teachers' college, some students carrying six classes a day, the recreation time of the students and their study periods during the day are important items in their health and school success. Considerable after-school, week-end, and evening work was reported. Many students used their study time for purposes of the pageant. Of course such activities as dancing may be thought of as recreational; but costume-making, waiting around sometimes for a half-hour or more for practice to begin, and the like can hardly be so considered.

A fourth and vital question is the effect of an exercise of this sort upon school morale. Seventy-one per cent (N-63) of those whose opinion was definitely stated at the conclusion of the

exercise thought the pageant benefited school spirit, the remainder (N-36) were of a contrary opinion.[1] Many who thought it benefited school spirit were not of this opinion until the pageant had been given. The student returns indicated that during the pageant practice, morale was low. The students felt imposed upon, overworked, disinterested. In many cases they felt they were not getting the training for which they had come to the institution. Critic teachers were reported as absent from too many conferences, energies that were being expended upon the pageant were thought of as taken away from school work. A good deal of fussing, dissatisfaction, and needless scolding of training school children were reported. Classes in the training school were interfered with when children were called out and those who remained became restless. Instances of intrafaculty disharmony were cited. But after the pageant was over, then for many school feeling changed for the better. A greater sense of loyalty to the college arose with admiration and pride in the splendid success of the pageant as a work of art.

Faculty opinion varied from complete acceptance, as in the words, "Well worth the time," "Pageant of great value to the school," "Good effect upon 95 per cent of the student body;" to "Doubtful," "Students worn out," or "Some school spirit developed, mostly counteracted by the absolute autocracy of direction." Another report reads: "If the pageant were treated as a project and the students given the opportunity to work out the plot and its details, I believe it might be very helpful in promoting school spirit and initiative. . . . . I am sure that such educational experts as Dewey and Kilpatrick would not approve of exploiting students for the advertising of any school."

Fifth, what educational or cultural values did the pageant have? Coming as it did early in the spring at a time when ener-

[1] Data on interferences with classes, periods missed, etc. are more comprehensive, due to a greater number replying and to cross checks with instructors' reports, etc., than are those for some of the more general problems, such as this.

gies are apt to be at low ebb the pageant, some thought, served as an excellent variation in school routine. As such it had the value of a May Day festival or other spring school function, training in the presentation of which is needed by students in teacher-training institutions. If in addition the training school children and the college students are familiar with the story and historical setting about which the pageant is built, they will learn a great many things.

Dancing and music were noted by many students as special advantages which came to them from the pageant. Those who took part in the special dances realized that they were trained by a teacher (a professional dancer engaged for this work) with whom they could never have afforded to study were they compelled to pay for the instruction themselves. Similarly many individual students expressed sincere appreciation for the extra training they received in music and art.

The pageant correlated readily with music, art, history, literature, Grecian mythology, and poetry. In school efficiency, pedagogy, and the history of education, the pageant procedures were used as illustrative material. One faculty member wrote, "pageant worth more for teaching history of Grecian education than several days of class work." Work in manual training, sewing, and physical training was correlated successfully with the pageant.

Of course, a very significant and not easily tested value of the work was its stimulation of esthetic appreciation. The pageant left in the minds of the more sensitive students a beautiful picture which many expressly recognized as a life-long treasure and joy.

Perhaps one of the most important values that can only come from a pageant of this sort is the training in or observing of the organization features which the putting on of a large school program offers. It was of great assistance to some students in giving them the imagery and perspective of a great production. Similarly training in coöperation and leadership were reported as significant values. These reasons indicate the importance of an effective and congenial scheme of organization.

The discussion in the previous paragraph leads to the sixth question; namely, what light did this study throw upon the problem of organization and direction of school exercises of this type? In a pageant of this size, gotten up as it was rather hastily, many difficulties arose. The significance of these may be gathered from the following statements. One faculty member wrote: "A great deal of unpleasant feeling among faculty because of misunderstanding of what was to be their duty." Another stated: "Some lack of organization noticeable, causing confusion and duplication, thereby tending to discord." Another wrote: "It was impossible for me to discover what was my definite job."

There were no faculty objections to a pageant *as such*. In fact, one member made this point specifically: "I think the idea of a pageant to be established possibly as a tradition in the school, is splendid; but I would recommend that a detailed plan of the affair be worked out in advance of the day of the first rehearsal."

Student opinion was well expressed in the following statement written by one of them: "Most every school that amounts to anything gives some kind of a pageant or big play which develops interest in the school, and I think that we should have something of the sort. But I don't think this pageant developed in the right spirit. It was made to be a disagreeable duty in most cases, and I think there was too much talking and fussing about it." Another expressed it as follows: "I think the pageant could be made a splendid school exercise and expression of the talent and creative ability of the students if they were allowed to take the responsibility for the leadership in the work and not be forced into places, only taking part because it means the loss of a credit not to do so. . . . . From the beginning the attitude of the majority of students was one of being forced into something distasteful to them. The only way to prove that a pageant could be successfully presented with student leadership and ideas would be a trial in giving one. If interest and coöperation are lacking it will prove either laziness or lack of real liking for and interest in presenting a pageant."

Some suggestions for democratizing the pageant were offered by students. "If the groups had been smaller and composed of volunteers, the outcome would have been more effective," was one of these. Another student wrote: "If the pageant had been given more as a project with more initiative and direction left to the students instead of dictated procedure from above, it would have developed more interest and real value to the student body." A faculty member stated: "No constructive planning left to students, so nothing of much educational value resulted."

It is difficult to achieve an unbiased summary of the recommendations for future organization coming from the investigation of this pageant; for in addition to the multiplicity of suggestions offered by a group of this size such a summary is subject to the errors of personal judgment. The suggestions which follow (appreciating the subjective error of treatment) are a reflection of the data on the three hundred questionnaire blanks returned.

1. The pageant should be recognized by the administration as part of the curriculum (for which all faculty members are responsible) and not merely a public exhibition. Teacher-training values should consequently take precedence over all other considerations. In other words, *the process of preparation should be accorded at least as much weight as the resulting performance.*

2. Matters concerned with the organization and direction of the pageant should be discussed with students as much as possible. Mimeographing of plans, directions, etc., and the discussion of these features are a useful means of instruction in the preparation of such school exercises. The seniors (as practice for similar work in their own schools later) should be given opportunity to develop, in coöperation with critic teachers, those episodes in which training school children take part. In so far as possible there should be definite delegation of authority to faculty members in order to develop and encourage modes of correlating the work of the pageant with the regular curriculum.

3. A suggested plan for the possible organization of such a

pageant is given in figure 1. The President appoints a Faculty Committee for the Pageant. This committee decides upon a date for the completion of plans for the giving of the pageant. At that time the plans are voted upon by the faculty. If accepted the work of developing the rest of the organization is begun.

The essence of the scheme is the delegation of responsibility. A plan is to be developed; directions given; outlines, in so far as possible, made specific in advance; and the individual faculty

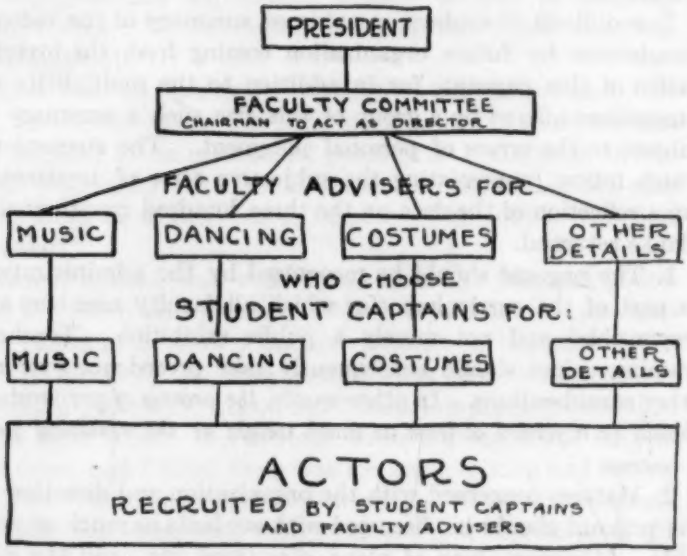

FIG. 1

members who have special parts given as much initiative and self-direction as the committee thinks advisable. If possible, each student captain should be encouraged to recruit the actors in his division of the work. Arrangement should be made for receiving suggestions from students and faculty members while the work is in process.

4. As regards interference with class work, no changes in courses or absences of students or faculty members in any de-

partment should be sanctioned without the consent of the administration and the department heads. This might seem platitudinous. In the study under consideration, during the absence of the president, a regularly scheduled examination was interrupted over the protest of the instructor in the course, due to a conflict with pageant practice.

5. Students working their way through school, or those in poor health or carrying a difficult course should not be required to take part in the pageeant. Likewise, faculty members to whom serious responsibilities are delegated, should be relieved of all or at least a part of their work during the most active period of preparation. From the standpoint of the mental hygiene, the critic teacher especially should be guarded against the addition of considerable work to her other duties. Obviously the mental and physical health of both students and faculty should be an object of careful observation at all times during the preparation of a large school exercise.

6. The problem of ushering at the performance should be recognized as an integral part of the Committee's work. If plans for handling the spectators on the day of the performance are not prepared carefully beforehand, serious trouble and confusion may result.

A NOTE ON THE VALIDITY OF A TEST OF SOCIAL INTELLIGENCE

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The Associated Press reports for December 29, 1927, were quoted in the San Diego, California, Union (on December 30) as follows:

> **The man with the high abstract intelligence gets the Phi Beta Kappa key, but the man with the high social intelligence gets the votes or the business as the case may be.**
>
> **There are three kinds of intelligence, Dr. F. A. Moss of George Washington University disclosed in a paper read before the American Psychological Association today,—abstract intelligence, which makes research workers and savants; social intelligence, which makes good politicians and business men; and mechanical intelligence, of which he said Henry Ford was an outstanding example.**
>
> **Tests for high social intelligence are the latest development in commercial adaptations of psychology. Dr. Moss told of one New York department store that has abandoned the ordinary intelligence tests and submits all prospective salespeople to "social intelligence" tests. Persons passing these tests with high ratings are said to be the ones most likely to develop into good sales people. . . . .**

The "Social Intelligence Test" developed by Dr. Moss and his associates[1] has been given to 258 entering students (largely freshmen) in the San Diego State Teachers College. The findings for this test and for the Thorndike Intelligence Examination, Series of 1925–1929, for these 258 students are given in table 1.

If we accept the Thorndike Intelligence Examination as a criterion, the 258 students are a fairly representative body in

[1] Published by the Center for Psychological Research, Washington, D. C.

this college; 49.22 per cent of the group reached or exceeded the college mean for the Thorndike Intelligence Examination. However, the chances are about 93 in 100 that the true difference in scores (i.e., the difference between the true scores) is greater than zero, since $\frac{D}{S.D_{(diff.)}}$ is 1.43. Since a finding of 3 means practically complete reliability, we know that 1.43 is about 48 per cent of what it should be in order to insure a difference always greater than zero.[2] Variability (spread) in the distribution of the scores of the 258 students is almost exactly that for the whole college group, 1233 cases.

TABLE 1

TEST	NUMBER	RANGE (IN SCORE POINTS)	MEAN	P.E.M	S.D.	C. OF V. (PEARSON)
Thorndike	1,233*	100	61.8	0.30	15.46	25.02
Thorndike	258	87.5	60.3	0.64	15.26	25.31
Moss (norm)	4,181		(Md.) 98			
Moss	258	91	98.0	0.68	16.31	16.44

* State Teachers College standard scores.

It is the purpose of this report to emphasize one measure of validity of the test of social intelligence. Validity is one of the most important of the characteristics of a standardized test. McCall[3] says that it is the most fundamental trait. Validity may be defined as the correspondence between the ability measured by the test and the ability as elsewhere objectively defined and measured. "When a test really measures what it purports to measure and consistently measures this same something throughout the entire range of the test, it is a valid test."[3]

[2] Garrett, Henry E. "Statistics in Psychology and Education." New York, Longmans, Green and Company, 1926, pages 128–133.

[3] McCall, W. A. "How to Measure in Education." New York, The Macmillan Company, 1923. Page 195.

It is obvious that two tests which purport to measure two different variables should yield high correspondence only by chance if each is a valid measure of the variable which it purports to measure. It is possible to illustrate this statement with validity coefficients given for tests of mechanical aptitude (mechanical intelligence, if we use the term as would Dr. Moss). In equal age groups the correlation between mechanical aptitude as measured by the Stenquist Mechanical Assembly Test and general intelligence is only about positive 0.20.[4] MacQuarrie claims for his "Test of Mechanical Ability" correlation of positive 0.22 with general intelligence.[4]

The coefficient of correlation (Pearson r) for the paired scores obtained by using the Moss and Thorndike tests with the 258 entering students was 0.560, probable error 0.029. The coefficient of alienation, which measures the absence of relation between two variables in the same way that the coefficient of correlation measures the presence of relation, was 0.828. In order to discover the degree of correspondence between the two variables measured by these two tests (Moss and Thorndike) as they really are without regard to imperfections in measurement, the coefficient of correlation was corrected approximately for attenuation.[5] The coefficient obtained was positive 0.644.

In view of the normality of the group tested and the existence of marked correlation between the paired scores for the two tests, it follows that the two tests must measure the same variable or variables to some degree at least. It might mean, of course, that social and abstract intelligence are so closely allied that it is unprofitable to attempt to discriminate between them. The two tests validate each other rather well, a condition which is undesirable when by definition we should expect "negative" results (as with the mechanical aptitude tests) rather than marked positive findings.

[4] Symonds, Percival M. "Measurement in Secondary Education." New York, The Macmillan Company, 1927, pages 385 and 387.

[5] Garrett, Henry E. Loc. cit., page 213, formula 48. Reliability coefficients as announced by the test authors were used.

THE RELATION OF THE CLASS ROOM SUCCESS OF CHILDREN IN COLLEGE PREPARATORY COURSES OF THE HIGH SCHOOL TO THEIR RATE OF PROGRESS IN THE ELEMENTARY SCHOOL

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In the rapid educational readjustment necessitated by the new demands and the growing complexities of modern life, the prediction of school success and the selection of pupils for special purposes stand out as important problems. The facts here presented are the result of one of a series of investigations begun at the New York State College for Teachers at Albany for the purpose of dealing with these problems.

The curriculum of the Milne High School, the practice school of the College, is organized on a four-year basis and is designed primarily for the purpose of preparing pupils to enter college, though some of the more "practical" subjects as typewriting, business writing, and home economics are given. The entering class each year is made up of some seventy to seventy-five pupils. There is some selection for the number of applicants exceeds the capacity of the school, and in any case children obviously not prepared for high school work are not admitted. The number of failures is not large, but occasionally there are some which cause the question to be raised as to whether, by more careful selection, better grouping, or some other means, they could have been avoided.

Intelligence tests? Yes, they have been used. But it has been possible to give the tests only after pupils were admitted and sometimes only after the beginning of class work.

From information sheets filled out before admission facts were obtained with reference to pupils' rate of progress through the elementary school with a view to finding whether that had

any relation to class room success in the high school especially during the first year. These and other data relating to high school students were furnished by the principal, Professor John M. Sayles.

In the class selected for study there were sixty-five pupils whose records were usable. Of these, ten had repeated some grade, thirteen had been accelerated, and forty-two had made normal progress in the elementary school. (One who had skipped a grade and later repeated was counted as having made normal progress.)

Each pupil's "general average" for the first half-year in the four main subjects, English, Latin, algebra, and biology, was computed, equal weights being given to marks received during the term and those received in final examinations. General average for the second half-year was found in the same manner except that here the final examinations were comprehensive examinations covering the work of the entire year, two—algebra and biology—being New York State Regents' examinations. If only a single mark in a subject could be obtained it was disregarded, otherwise the average of available marks was used even though the student did not take the final examination. Final examination marks at the end of the year were also averaged. Averages obtained in these ways were then arranged in columns under appropriate headings for the three groups, which will be referred to as "Retarded," "Normal," and "Accelerated," and from these it was possible to make up the summary given in table 1.

In this table it is clearly shown that during the first year of the high school the average grades of the "retarded" group are lowest, those of the "normal progress" group are considerably higher, while those of the "accelerated" group are highest of all. As might be expected the range for the "normals" is greatest. By testing statistically for the significance of the differences in the averages of the final examinations it is found that the chances are about 96 in 100 that the true difference between average for "normals" and average for "retarded" will be greater than 0. Similarly, the chances are about 87 in

100 that the true difference between average for "accelerated" and average for "normals" will be greater than 0. By a second test it is found that the difference between the averages of "normals" and "retarded" is about 5.9 times the P.E. of the difference, while the difference between the averages of "normals" and "accelerated" is about 3.5 times the P.E. of the difference. In general, then, we may conclude that the probability of success in the first year of high school is indicated by rate of progress in the elementary school. There is a slight indication here that repeating elementary grades is a little more

TABLE 1

Average grades and range of grades, in per cent, for first year high school pupils when grouped according to progress in elementary school

	"RETARDED"			"NORMAL"			"ACCELERATED"		
	Number	Average grade	Range	Number	Average grade	Range	Number	Average grade	Range
General average first semester..	10	69.1	49.0–78.8	42	79.5	54.2–91.3	13	82.9	67.7–94.9
General average second semester.....	8	71.4	65.8–76.8	42	76.3	59.5–90.3	12	82.2	75.7–95.5
Average of final examinations..	7	68.8	64.6–74.0	42	76.4	52.0–90.2	11	81.7	74.5–95.2

significant of poor scholarship than acceleration is of good scholarship during the first high school year.

In the above comparison, however, there is overlapping of groups. What about individuals? To follow up this part of the problem, a method of ranking was used. Without presenting individual rankings, the positions taken by the children of the three groups may be pretty clearly shown by indicating the number from each group falling into the several divisions when the entire number is divided into fifths, numbering from highest to lowest. Table 2 shows such a distribution based on first semester general averages.

From this table it is to be seen that during the first semester of high school work "retarded" pupils sink to the lowest levels, the "accelerated" tend to rise to the higher levels, while the "normal-progress" pupils are rather evenly distributed. When ranked on the basis of second semester general averages the

TABLE 2

Number of "retarded," "normal" and "accelerated" pupils in each fifth when ranked according to general averages in the first semester of high school

	"RETARDED"	"NORMAL"	"ACCELERATED"
Highest fifth	0	8	5
Second fifth	0	10	3
Third fifth	1	9	3
Fourth fifth	4	8	1
Lowest fifth	5	7	1
Totals	10	42	13

TABLE 3

Number of "retarded," "normal" and "accelerated" pupils in each fifth when ranked according to final examination grades at the end of the first year of high school

	"RETARDED"	"NORMAL"	"ACCELERATED"
Highest fifth	0	9	3
Second fifth	0	8	4
Third fifth	0	9	3
Fourth fifth	3	8	1
Lowest fifth	4	8	0
Totals	7	42	11

several groups show so nearly the same distribution as that of Table II that little may be added by presenting the tabulation. When those who remained at the end of the year are ranked on the basis of averages in final examinations covering work of the entire year (two of these were New York State Regents' examinations), they are distributed as shown in table 3.

Results for the year as a whole are thus much the same as those for the first semester. In the final examinations the "retarded" tend to sink to lower levels, the "accelerated" tend to rise, while the "normals" tend to hold an even distribution.

Let us review now the success of the children in all the subjects undertaken. (A number had attempted to carry "extra" subjects.) Of the thirteen "accelerated" beginning the year, one (a boy who had entered the elementary school at the age of nine) left early in the year with grades at or near failure, one failed to get credit in two subjects, one failed to get credit in one subject, one left with a fair average (79.2 per cent), and the nine others received credit in all the subjects undertaken. No accelerated pupil dropped a subject during the year. On the other hand, of the ten "retarded" pupils who entered, one left with a fair average (76.5 per cent), two left with averages at or near failure, and every one of the other seven either dropped or failed one or more of the subjects undertaken. Of the forty-two normals, twenty-two dropped or failed one or more of the subjects undertaken.

Inability to secure certain data prevented the study of other Milne High School classes. It was possible, however, to compare records of high school graduates accepted for entrance to the New York State College for Teachers. These were available for some seventy to ninety per cent (estimated) of students in the classes compared. Tabulation of the data revealed that among 1290 high school graduates entering five consecutive college classes there were 684 who had been accelerated, 583 who had made normal progress, and 23 who had been retarded in the elementary school. Evidently, children who are retarded in the elementary schools are not likely to go through high school with scholarship records high enough to meet the entrance requirements of this college. These numbers would also seem to indicate that successful acceleration in the elementary school is not likely to be to the disadvantage of children doing college entrance work in the high school.

Now among the 1290 students under consideration were many who for superior scholarship in high school had been granted

New York State Scholarships carrying a stipend of $100 per year for a four-year period. The way in which these scholarship students in the five college classes (designated as classes A, B, C, D, and E) were distributed when grouped according to whether they had been "retarded," "normal," or "accelerated" in their elementary school progress is indicated in table 4.

For classes A, B, and C the entrance requirements were the same, and for class D they were the same as for class E. For classes D and E, however, they were slightly more rigid than

TABLE 4

1290 entering college freshmen grouped according to elementary school progress and according to number and per cent in each group with state scholarships

CLASS	RETARDED IN THE ELEMENTARY SCHOOL			NORMAL IN THE ELEMENTARY SCHOOL			ACCELERATED IN THE ELEMENTARY SCHOOL		
	Number reported	Number with scholarships	Per cent with scholarships	Number reported	Number with scholarships	Per cent with scholarships	Number reported	Number with scholarships	Per cent with scholarships
A (226)	5	1	20.0	93	22	23.6	128	42	32.9
B (195)	5	0	00.0	76	23	30.3	114	24	21.0
C (306)	5	2	40.0	134	31	23.1	167	47	28.1
D (284)	3	0	00.0	137	30	21.9	144	41	28.5
E (279)	5	0	00.0	143	26	18.2	131	27	20.6
Totals (1290)	23	3	13.0	583	132	22.6	684	181	26.5

for the others. For example, Regents' grades were required and high school grades were not accepted as had formerly been done. In most essentials, however, the requirements were the same for all five classes. However, the table shows that among those who finally arrive at State College, those persons who have been accelerated in the elementary school are more likely to be holders of State Scholarships earned in high school than are those who have made normal progress in their elementary school training. This holds true for the total num-

ber spread over a five-year period, and it also holds true for every individual class in the period except one (class B). The number of those retarded in the elementary school is of course too small to make the per cent of those holding scholarships significant. The smallness of the number is itself significant as stated above.

SUMMARY AND CONCLUSIONS

As shown by the data presented, it is the children who have failed and dropped back somewhere in the elementary school who are lowest in scholarship during the first year of high school, who fail or drop subjects most often, and who seldom find their way into college. On the other hand it is the successfully accelerated children who rank in the higher scholarship levels in the first year of their high school work, who fail least often, who seldom drop subjects because of lack of ability, who tend to be in the majority of those accepted for entrance to college, and who, on going to college, carry with them the highest per cent of New York State scholarships. A record of normal progress in elementary school promises much more in the way of high school success than retardation but less than acceleration.

Applied practically, all this would seem to mean that we have here a factor which should be used in the selection of pupils for special courses, in determining the amount of work a child may undertake, in assigning children to sections where ability-grouping is undertaken at the beginning of high school work. But in order to be of use the facts must be at hand. A complete record of each child's scholarship and rate of progress should go with him from grade to grade. It should contain facts about unusual conditions, as prolonged illness, which may explain such things as low scholarship and grade repetition not due to lack of ability.

Incidentally at the times when children are assigned to class sections the use of such records might allow many a child to receive credit for accomplishment due to perseverance, a quality which can hardly be ensnared in a group test

of thirty to fifty minutes. It need not mean the elimination of the group test. Test score, scholarship record, and record of rate of progress should supplement each other. The tests may be of great value for checking up on the abilities of retarded and accelerated children, also for securing supplementary information about the "normal-progress" group, some of whom might have been able to go faster but had not the opportunity, and others of whom were kept to grade when they should have repeated.

The keeping of progress records should be begun at once by those in charge of schools. But even now much information about the previous progress of children can be obtained even though their records have not been preserved. Applicants for admission to Milne High School have furnished such information about themselves for a number of years. The present study indicates that it is usable and valuable. Both from the analysis of the success of the first year high school class and from the study of the records of 1290 high school graduates entering college, it is evident that high school success of those children who are preparing for college bears a fairly close relationship to their rate of progress in the elementary school, especially when their progress has not been regular.

THE ASSOCIATION TEST AS A MEANS OF DETERMINING THE RELATIVE FAMILIARITY OF RETAIL STORES

E. J. ASHER

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This study represents an attempt to measure the relative familiarity of retail stores in the city of Austin, Texas, by the use of an association test, and to see whether or not the familiarity of the various retail stores has any relation to the amount of money spent by these stores in advertising. The study is somewhat similar to a study made by Donovan[1] in the city of Philadelphia in which the mental dominance of a group of advertised commodities was determined through an association test. This study is unique, however, in that retail establishments are used instead of commodities, and in that the relative familiarity of the firms is compared to their advertising expenditure.

The questionnaire used in this investigation is similar in form to the questionnaire used by such other investigators as Geissler,[2] Hotchkiss and Franken,[3] and Donovan.[4] Different kinds of retail stores were used instead of commodities, the directions and instructions being altered accordingly. The back of the questionnaire contained the instructions, while the face contained the kinds of retail stores. A copy of the face of the questionnaire is shown below.

[1] Donovan, H. M.: Advertising Response; J. B. Lippincott, Philadelphia, 1924.

[2] Geissler, L. R.: "Association-Reactions Applied to Ideas of Commercial Brands of Familiar Articles"; Journal of Applied Psychology, 1917, vol. i, pp. 275 ff.

[3] Hotchkiss, G. B. and Franken, R. B.: The Leadership of Advertised Brands; Doubleday, Page and Co., New York, 1923.

[4] Donovan, H. M.: Ibid.

While picture-shows, barber shops, restaurants, and real estate companies can hardly be considered as retail stores, the similarity between these establishments and the retail stores is such that it seemed advisable to include them in the list.

FACE OF QUESTIONNAIRE

Name.....

Address.....

Male or Female.....

Write in the space *over* each separate kind of store the name of such a store that *first* comes to your mind.

---

1. ..... Drug store	11. ..... Plumbing company
2. ..... Shoe store	12. ..... Creamery company
3. ..... Picture show	13. ..... Jewelry store
4. ..... Restaurant	14. ..... Grocery store
5. ..... Men's Clothing store	15. ..... Automobile agency
6. ..... Bakery	16. ..... Ladies' store
7. ..... Music store	17. ..... Barber shop
8. ..... Florist	18. ..... Bank
9. ..... Engraving company	19. ..... Hardware store
10. ..... Furniture store	20. ..... Real Estate company

The subjects used in this investigation were a group of 112 high school seniors selected at random from the Austin Senior High School. This is the only senior high school in the city. It is centrally located, and does not give an advantage to any

particular store or kind of store because of its location. Of the 112 students 55 were boys and 57 were girls. This number is easily representative of the seniors in the Austin High School being something over two-thirds of the year's graduating class.

The association test was given to this group about the middle of December, 1925. The instructions and procedure were explained by the examiner, and the accuracy with which the questionnaire was filled out indicated that the students had no difficulty in understanding what was expected of them.

The second part of the investigation was an effort to secure the advertising expenditure of the dealers mentioned by the students. The dealers were interviewed for a statement of total advertising expenditure for the twelve months period previous to the testing. Since the test was given just before the Christmas holidays of 1925, the advertising expenditure over the twelve months previous to the testing was taken as representative of the influence of advertising on the responses made by the students. Considerable difficulty was encountered in securing exact figures of advertising expenditure from the dealers. Some refused outright to give out any statement regarding their advertising expenditure; others would only indicate the per cent of their total expenditure devoted to advertising; while others would only give approximate expenditures, being unable, probably, to give exact figures. A few were glad to coöperate.

Since newspaper advertising is probably the leading form of advertising in a locality of this size, an attempt was made to secure a statement of newspaper advertising expenditure for the twelve months prior to the testing. By limiting the number of dealers to the two or three most familiar ones in each group, a statement of the exact amount spent by each in newspaper advertising was secured from the two local newspapers. This was facilitated by the fact that the two newspapers are under the same management. Since the figures from the dealers were so fragmentary, it was decided to abandon them altogether in the comparison of familiarity and advertising expenditure.

TABLE 1

The conformity of newspaper advertising expenditure to the relative familiarity of retail stores

KIND OF STORE	ASSOCIATIONS	NEWSPAPER ADVERTISING EXPENDITURE	NUMBER OF STORES NAMED	NUMBER OF BLANKS
Drug stores:				
Store A	63	$1,102.59	11	2
Store B	13	216.00		
Store C	7	38.97		
Shoe stores:				
Store A	28	2,021.82	9	13
Store B	19	2,036.60		
Store C	15	782.14		
Picture shows:				
Show A	66	4,746.59	5	0
Show B	41	3,091.05		
Restaurants:			12	9
A	36	22.50		
B	31	0.00		
C	17	30.00		
Men's Clothing:			6	8
Store A	41	4,339.93		
Store B	29	2,713.46		
Store C	15	2,576.79		
Bakeries:			15	8
A	62	662.79		
B	19	1,325.61		
C	7	419.96		
Music stores:			2	5
Store A	98	1,204.58		
Store B	9	1,664.50		
Florists:			8	16
Shop A	54	215.40		
Shop A	26	185.60		
Shop C	7	0.00		

TABLE 1—*Continued*

KIND OF STORE	ASSOCIATIONS	NEWSPAPER ADVERTISING EXPENDITURE	NUMBER OF STORES NAMED	NUMBER OF BLANKS
Engraving companies:			7	27
A	42	173.25		
B	25	1,111.63		
Creameries:			6	15
A	43	0.00		
B	36	142.00		
C	15	33.50		
Ladies' stores:			10	23
Store A	17	30,086.18		
Store B	16	936.72		
Store C	11	7,810.17		
Barber shops:			17	12
Shop A	33	27.84		
Shop B	13	207.72		
Hardware stores:			5	20
Store A	39	447.21		
Store B	37	425.25		
Banks:			5	16
A	44	917.92		
B	25	468.57		
Real Estate companies:			10	25
Company A	29	2,544.72		
Company B	16	1,149.96		
Company C	12	204.12		
Jewelry stores:			8	22
Store A	31	540.00		
Store B	28	1,544.01		
Store C	9	221.50		
Grocery stores:			20	0
Store A	29	214.38		
Store B	9	223.86		

TABLE 1—*Continued*

KIND OF STORE	ASSOCIATIONS	NEWSPAPER ADVERTISING EXPENDITURE	NUMBER OF STORES NAMED	NUMBER OF BLANKS
Plumbing companies:			11	20
Company A	30	508.20		
Company B	19	183.23		
Company C	15	366.64		
Automobile agencies:			12	20
A	27	1,861.42		
B	18	422.18		
C	15	366.64		
Furniture stores:			6	19
Store A	46	1,813.89		
Store B	37	6,598.59		

Credit for tabulating and compiling the results of this investigation should go to Mr. Robert Levy. His Bachelor of Business Administration Thesis included detailed tables and graphs showing the relative familiarity of the different stores and a comparison of the responses made by boys and girls.

The results are given here in table 1. It seemed expedient to substitute for the actual names of the stores certain symbols. The stores are referred to as store A, store B, and store C. Store A in each group is the most familiar, store B the next most familiar, etc. The relative familiarity is shown after the name of the store. The figures represent total familiarity, the boys and girls being combined. The number of stores named in each group and the number of times the students were unable to name a store are indicated in the table. These facts throw light on the number of votes received by the leaders in each group. The third column of the table shows the newspaper advertising expenditure of each store.

The results show much the same sort of thing found where an association test has been used with branded commodities. In some groups, e.g., music stores, one store is clearly the

leader. In other groups, two or three stores share the dominance, e.g., jewelry stores. The results show that the association test can be used as a means of determining the relative familiarity of retail stores. In addition, the test reveals facts that are of considerable significance to the various retail establishments. It indicates the source and strength of competition. It indicates the effectiveness of the advertising used in making the store known. Further, if the familiarity of a particular store is not in keeping with the amount spent in advertising or the amount of business done, a search for the causes of the discrepancy may reveal such factors as poor location, poor retail name, age of firm, unpopular brands, etc. Being confined to a locality of this size, such factors can be discovered and checked more easily with the result that relative familiarity of retail stores as determined by an association test is of greater practical value than the relative familiarity of trade-names of nationally advertised products.

In order to show the relation of newspaper advertising expenditure to relative familiarity, these retail establishments are arranged in order of relative familiarity in table 1. If the newspaper advertising expenditures for the different establishments are ranked in order of amount, a comparison of ranks in familiarity and ranks in advertising expenditure reveals an agreement in 30 of the 52 stores as follows: three drug stores, one shoe store, two picture shows, three men's clothing stores, one bakery, three florists, two creameries, one ladies' store, two hardware stores, two banks, three real estate companies, one jewelry store, one plumbing company, and three automobile agencies.

This comparison is a legitimate one since an examination of table 1 will show that the two or three leaders in each group received in almost every instance by far the larger portion of the 112 associations. The third store in almost every instance received a comparatively small number of associations. If the advertising expenditure for the remaining stores could have been obtained, a comparison would not have been entirely valid when the familiarity was represented by only one, two, three, or four associations.

The agreement between newspaper advertising expenditure and familiarity indicates pretty definitely the influence of newspaper advertising in making stores known in this locality. This does not mean, of course, that newspaper advertising is the sole cause of the familiarity where an agreement occurs. Other factors are operating to determine familiarity, but in 30 of these 52 establishments, at least, these factors operate along with newspaper advertising to effect an agreement.

In the remaining instances, these factors operate or influence familiarity to such an extent that a discrepancy occurs between newspaper advertising and familiarity. Some of these factors may be primarily responsible for the associations. In such a case, newspaper advertising is clearly of subordinate importance in determining familiarity. Many times, however, factors are involved that definitely interfere with the influence of newspaper advertising and for that matter other forms of advertising as well. It is important for the retail dealer to know or to be able to discover both kinds of factors if he is to advertise with the highest effectiveness.

Many of these factors were discovered through the personal interviews of the dealers. With some of the stores interviewed other forms of advertising were clearly of greater importance than newspaper advertising. Furniture store A, for example, uses window display as the main form of advertising. The unusual amount of space given to window display is very striking and very effective, so effective that it is by far the most important form of advertising for this store.

Among the factors that cause a discrepancy between newspaper advertising and familiarity other than the predominance of other forms of advertising are the following: age of concern, kind of retail name, brand of goods handled, and the fact that some establishments are often classed under two or three different heads.

Music store B is comparatively new and the advertising expenditure in this case represents an attempt to put the store before the public immediately. Bakery B is the largest bakery in the city. It has the largest advertising expenditure,

but it stands low on the association test almost entirely because of the name which is exceedingly hard to spell and pronounce and consequently hard to remember.[5] Automobile agencies A and B are Ford agencies. Here the familiarity is undoubtedly influenced by the kind of product sold.

The fact that some establishments are often listed under two or three different kinds of store is illustrated in the case of a department store. Such a store might be listed under ladies' store, men's clothing store, and possibly sporting goods store. Engraving company A falls logically under engraving companies, while company B in the same group should fall logically under printing companies. The advertising expenditure listed for ladies' stores A and C and for engraving company B include the expenditures for things other than those indicated by the name of the group in which they fall.

When these factors are taken into consideration, the importance of newspaper advertising as a force in determining familiarity is greater than is evident from the comparison made above. While in some cases other forms of advertising are clearly more important than newspaper advertising, it would seem from this investigation that newspaper advertising is by far the most important single determining influence in making a store known in this locality.

SUMMARY

1. The relative familiarity of retail stores can be determined by an association test.

2. The relative familiarity of the retail store gives the retail dealer some measure or idea of such factors as strength and source of competition, effectiveness of the form of advertising used in making the store known, and may lead in some cases to the discovery of factors that are keeping the store from being known.

3. A comparison of relative familiarity and newspaper advertising expenditure indicates that newspaper advertising is

[5] It is significant to note that the name of this bakery has been changed since this investigation was made.

one of the primary forces in determining familiarity in this city.

4. The comparison further indicates that when such factors as age of concern, brand of goods handled, and kind of retail name are taken into consideration, advertising is by far the most important single factor in determining the familiarity of retail stores.

NOTES AND NEWS

Dr. S. D. Porteus, Director of the Psychological Clinic of the University of Hawaii, has been invited by the Australian Research Council to visit that country next year for the purpose of initiating psychological studies of the aboriginals. He expects to visit the tribes in the central, southern and northwestern sections of the country. Some of these tribes have never been studied scientifically. Particularly those who know of the epochal Torres Straits Expedition will await with interest the results of the application of tests and anthropometric measurements to these primitive people. The expedition will require at least six months.

The Iowa State Council for Child Study and Parent Education, organized in September, 1926, held its second annual conference June 20–23, 1928 at Iowa City, Iowa. The purpose of this conference was to discuss the mutual problems and interests of parents, teachers, nurses, social workers, ministers and all persons interested in the welfare of children.

Attention of the readers of this JOURNAL is again called to the Fifth International Conference of Psychotechnics to be held in Utrecht, Holland, September 10–14, 1928. Those seeking further information should write to the Secretary, Dr. J. E. DeQuay, Psychological Laboratory, Wittevrouwenstraat 9, Utrecht, Holland.

The National Child Welfare Association, 70 Fifth Avenue, New York City, through its General Secretary, Charles F. Powlison, reports an attendance of approximately 1200 persons at the National Conference on Character Education in Schools arranged by this Association in coöperation with Teachers College, Columbia University. This conference was held on March 2–3, 1928.

The aims of character education as presented in the addresses are the development of (1) the ability to distinguish between right and wrong, (2) the desire to choose the right instead of the wrong, and (3) the ability to do and the habit of doing the right in real situations in life. There seemed to be pretty general agreement that ethics or morals should not be taught in classes organized for that purpose. The proceedings revealed a wide and serious interest in character education among those who deal with youth in school, church, welfare organizations, and the home.

Secretary General, J. M. Lahy, of the International Congress of Psychotechnique, announces that the proceedings of the Fourth International Congress held in Paris last October are now ready for distribution. The following topics are included in the printed proceedings:

1. Questions de méthodes: Communications et rapports de: W. Stern (Hambourg), F. Geise (Stuttgart), C. Ferrari (Bologne), G. I. Rossolimo (Moscow), J. Joteyko (Varsovie), M. J. Froloff (Moscow), H. Heinis (Genève), P. Diakonow (Moscow), C. Cimatti (Faenza), L. J. Bykowski (Lwow), C. de Madariaga et J. Mallart (Madrid), F. L. Wells (Boston), Rosenthal (Bruxelles), M. Sirkin (Kharkof), A. Mandrika (Kharkof), Veinberg (Kharkof).

2. *Les Tests:* Communications et rapports de: Ed. Claparede (Genève), S. Hellerstein (Moscow), E. Weszely (Budapest), M. et Mme. Pieron (Paris), J. M. Lahy (Paris), S. Roux de Montlebert (Metz), G. Forster (Prague), H. Henning (Dantzig), Mlle. D. Weinberg (Paris).

3. L'Etude du Travail Humain. Communications et rapports de: O. Lipmann (Berlin), W. V. Bingham (New York), H. Rupp (Berlin), Spielrein (Moscow), A. Fessard (Paris).

4. Les Problémes de la rationalisation. Communications et rapports de: W. Moede (Berlin), W. Ruffer (Berlin), Giese (Stuttgart), G. Revesz (Amsterdam), K. Hackl (Vienna), B. Biegeleinsen (Cracovie), C. Casacof (Paris), Mrs. Gilbreth (Montclair).

5. La Sélection Professionnelle. Communications et rapports de: K. Marbe (Würzburg), W. Spielman (London), F. Seracky (Prague).

6. La Sélection dans les Transports. Communications et rapports de: J. M. Lahy (Paris), W. V. Bingham (New York), E. C. Eriksen (Copenhagen), J. Vana (Prague).

7. L'Oreientation Professionnelle. Communications et rapports de: A. G. Christiaens (Bruxelles), O. Decroly (Bruxelles), F. Kiesow (Turin) Th. Valentiner (Bremen), A. De Sana Faria de Vasconcelos (Lisbonne) Fr. Seracki (Prague), Paul Razous (Paris), E. Weszely (Budapest), N. Braunshausen (Luxembourg).

8. La Psychotechnique et l'Apprentissage. Communications et rapports de: J. P. Ahrend et A. Robert (Dommeldange), M. D. Levitoff (Moscow), A. Toltchinsky (Moscow), Helga Eng (Oslo).

9. La Psychotechnique à l'Ecole. Communications et rapports de: M. et Mme. Pieron et H. Laugier (Paris), J. P. Porter (Athens), M. Foucauld (Montpelier), R. W. Schulte (Berlin).

10. La Psychotechnique et l'Hygiène Mentale: Communications et rapports de: E. Toulouse (Paris), A. Fessard, H. Laugier et S. Nouel (Paris), J. P. Porter (Athens), R. Dupouy (Paris), G. Petit (Paris), R. Jeudon (Paris), O. Klemm (Leipzig), Mlle. Weinberg et J. M. Lahy (Paris), A. Wreschner (Zurich), M. Ponzo (Turin), F. Picard (Paris), Juarros et M. Soriano (Madrid), R. Mignot (Paris).

11. Organization de la Psychotechnique. Communications et rapports de: D. R. Wilson (London), Mme. F. Baumgarten (Soleure), Speilrein (Moscow), P. Devinat (Genève), J. Wojciechowski (Varsovie), P. Sollier (Bruxelles).

The price per copy is $3.00 and orders should be sent to Secretary General, Conferences International of Psychotechnique, M. J. M. Lahy, 22 Avenue de l'Observatoire, Paris, 14e, France.

BOOK REVIEWS

KARL J. HOLZINGER. *Statistical Methods for Students in Education.* Boston: Ginn and Company, 1928. 372 pp.

Fifteen years ago scarcely anything had been written concerning statistical methods for students of education. The few students of education who desired to learn statistical techniques were forced to go to books prepared primarily for students in other fields. These books were frequently highly mathematical and were usually written in language which students of education read with difficulty.

The situation is now quite different. There are available for students of education a number of excellently written texts in elementary statistics. These texts have been freed from unnecessary mathematics, they have chosen their illustrative material from the field of education, and they have been written in a simple, straightforward style. Whereas today most graduate schools of education require some training in statistics, ten or fifteen years ago, this subject was rarely, if ever, demanded as a part of the student's curriculum.

It is the reviewer's opinion that Professor Holzinger's book is in many respects the best book which has yet appeared in its field. It is scholarly and sufficiently thorough to meet the demands of students of psychology and education. It is an excellent contribution to the field.

The organization of the book is good. After dealing with the collection, classification, and graphic representation of data, a brief account of logarithms is introduced. Then follows a chapter on errors in calculation and measurement. Subsequent chapters are devoted to averages, measures of dispersion, percentiles, correlation, the binomial theorem, the normal curve, sampling and response errors, partial and multiple correlation, and a number of miscellaneous topics. The reviewer commends most heartily the inclusion of the chapter on logarithms as a means of reducing arithmetical labor and increasing the probability of accurate results.

The author's position on moot questions may be somewhat dogmatic but is clearly defined and consistently followed. The reader may not agree that all scores should be assumed to be correct to the nearest integer, as indicated on page 25, but he will agree that writers of books must take a definite position on this point. The reviewer prefers to decide the question of the limits of class intervals in terms of the nature of the scores which are being treated. In some cases this means clearly

that the scores should be assumed to be correct to the nearest integer, but in other cases it seems just as clear that this is not the case.

The mechanical make-up of the book is very superior. It has evidently been written, read, composed, and proof-read with painstaking care. A subscript has been omitted on page 154; on page 174 a correlation coefficient is given as .806, and on page 175 another coefficient is given as +0.752. The significance of the "0" and the "+" sign in the latter case is not clear. On page 53 the title of a table begins with the word "Showing," while on page 34 this practice is condemned. The reader may also question the practice of having a student calculate standard deviations and correlations as exercises in the use of logarithms on pages 63 and 64, when the terms *standard deviations* and *correlation* are presumably not known to the student. However, errors and inconsistencies are neither numerous nor serious.

This book will make an excellent text for a second course in statistics. In the reviewer's opinion it is too difficult for use as a text in an introductory course. In spite of its avowed freedom from mathematical content, there is present too much symbolism and too much derivation of formulae for the average first year graduate student in education. The reviewer will use this book for his own second course but will employ a somewhat easier text for his introductory course.

R. L. MORTON,
Ohio University.

WAYLAND F. VAUGHN. *The Lure of Superiority.* New York: Henry Holt and Company, 1928. Pp. viii + 307.

The special technique employed by those who interpret superior achievment in terms of I Q and the psychoanalytic approach to the study of genius are both products of the past two decades. Certain of the findings set forth by the proponents of these two techniques are apparently diametrically opposed. For example, the mental tester frequently asserts that the eccentricity of genius is largely a myth, the genius being characterized by mental poise and well-rounded wholesome development. The psychoanalyst insists on the other hand that the manifestation of genius is a result of compensatory endeavor. According to the psychoanalytic point of view persons with marked deficiencies are peculiarly susceptible to the will-to-power. In such individuals the emotions roused by the consciousness of inferiority may stimulate them to the attainment of distinction in art, religion, learning, physical prowess, etc. To the psychoanalyst drive is thus a factor no less essential than ability in effecting superior achievement.

The Lure of Superiority is a psychological study of inferiority and its possible compensations. The approach while not entirely psychoanalytic makes use of certain concepts similar to those used in psychoanalysis.

Originally presented as a Ph.D. thesis at Harvard University this study has been rewritten for the lay reader. The author shows in a most engaging manner how men and women in the face of apparently insuperable obstacles succeed in impressing their names on the roll of immortals. Labor movements, feminists, the Jews, and a number of prominent individuals are studied in detail to make evident how handicapped groups and afflicted persons seek to work out their particular compensations. Individual chapters are devoted to psychological analyses of Schopenhauer and Lincoln.

Although the psychology of Alfred Adler is taken as the basis for this study Professor Vaughn extends the Adlerian conception to include compensation for such social inadequacies as poverty, family disgrace, unpopularity, moral lapses, etc. The author states that these various types of inferiority are so interrelated that the situation for any individual is apt to be extremely complex. Thus, the man brought up in abject povery is likely to suffer from social inferiority. Undernourishment may leave him with a weak body (physical inferiority). Excluded from good society by lack of funds, it is conceivable that unfortunate friendships may be formed which lead to immorality (moral inferiority). It is obvious that in this hypothetical case the source of the will-to-power would be exceedingly elusive.

In studying compensatory behavior the temporal sequence of events is not always easy to discover. In some instances a defect may lead to compensation; in other instances the defect in one field may be the result of specialization in another. For example, social inferiority may lead to intensive work. Intensive work on the other hand may deprive an individual of his social contacts thus giving rise to social maladjustment. Often the situation is a vicious circle,—social inferiority leading to intensive work, intensive work aggravating the social handicaps, and then the increased social inferiority ending in even more intensive work.

Compensation may be physiological or it may be psychological. The lungs demonstrate the law of physiological compensation. For example, if one lung is weakened by injury or disease the other lung develops a supernormal strength which enables the body to adjust itself to the demands of the environment, despite its defects.

Another example of the principle of compensation may best be presented by employing the author's own terminology. "Psychological compensations fall into the direct (compensation in kind) and the vicarious (compensation by substitution). Direct compensation means that the individual devotes himself to strengthening of his weakness. The poor boy strives to become wealthy, the ignorant to become learned, the vulgar to become refined, the weakling to become an athlete" (p. 75).

According to the above point of view the lives of famous men frequently have been dramatizations of the story of the ugly duckling. The un-

desirable traits which have exposed these men to the hostile treatment of society have nevertheless been desirable for their stimulating effect upon the fruition of their genius. It is at this point that the difference between Professor Vaughn's point of view and that of certain of the mental testers becomes most evident. If one accept the doctrine that genius is a product of compensatory endeavor it is inconsistent to accept the additional hypothesis that the so-called gifted children are destined to impress their names on the roll of the immortals. According to the mental testers the gifted child bears little resemblance to the ugly duckling. The gifted child is nervously stable and well-balanced and he therefore has little reason for compensatory endeavor. It is of course true that one might conceive of gifted children as quite stable and yet find instability quite prevalent among artists, musicians, etc. Many of the mental testers fail to preserve this distinction (although it is sometimes mentioned).

Although the student of psychology is likely to be irritated by the looseness and vagueness with which terminology is employed in psychological literature he must recognize the significance of the psychoanalytical approach in the study of superior achievement. The collective conclusion gleaned from their literature seems to be opposed diametrically to the views advocated by the mental testers previously referred to. In the opinion of the reviewer, Professor Vaughn's work should serve as an effective antidote to the claims of these writers.

In justice to Professor Vaughn it should be stated that he realizes the limitations of his study of the dynamics of human behavior. He acknowledges frankly that human nature has many diverse sides and that no single theoretical doctrine is adequate to account for all the actions of men. "No one theoretical doctrine can suffice to describe adequately the heterogeneous trends of human conduct. In outlining the details of the inferiority-compensation process it is not claimed that the theory exhausts the principles by which behavior can be analyzed. Compensation for inferiority does play a rôle, however, and a very important one, in human motives. Though it should be supplemented by other views of the origin of motives, the theory of compensation remains a valuable scheme upon the basis of which we can better understand the paths that lead to superiority and the realization of our ideals" (p. vi).

HARVEY C. LEHMAN,
Ohio University.

ENGLISH BAGBY. *The Psychology of Personality.* New York: Henry Holt and Company, 1928. Pp. vii + 236.

Professor Bagby states in his preface that during the last twenty years, with their emphasis on experimental methods, purely descriptive studies have been largely neglected. His book is frankly of the descrip-

tive type, the main emphasis being on abnormal tendencies illustrated by well selected clinical cases. No attempt is made to incorporate into the work any experimental or statistical material on the subject of personality. The chapter on worry may be selected as illustrative of the nature of the work. While normal emergencies are recognized as causes of worry, it is suggested that many such fear-provoking situations may be well met by the person who is equipped with "balancing factors." Balancing factors are activities such as recreation which provide distraction and temporary reduction of emotional tension.

Aside from such exigencies as may occur to anyone from time to time, the author outlines three classes of personality defects which give rise to worry. They are (1) inadequacy of information with an inhibition about asking for assistance and advice; (2) the tendency to repress fear-provoking problems; and (3) generally inadequate training.

In his discussion of worry and inadequate training the writer states that the difficulty with modern education consists in the fact that its objectives are not sufficiently well defined. In the light of the almost frantic concern with objectives on the part of those educators who write textbooks for teachers colleges Professor Bagby's charge becomes rather amusing. He says that the aim of education should be that of providing education for adjustment. Having thought of so many other aims for education it would almost seem that the professors of education might have thought of that themselves. It seems to the reviewer that the author does not score so readily in his charge that modern schools give very little attention to enabling the student to learn the requirements and opportunities of the various occupations open to him as possibilities. Is it not true that just this information is one of the major concerns of any adequately trained vocational counselor?

Such matters as repression, defense reactions, inferiority complexes, hysterical traits, etc., form the subject matter of other chapters. While such writers as Freud, Adler and Jung are mentioned the author is not carried away by any particular set of concepts. The book will help the trained clinical psychologist to speak his piece more fluently, will provide the less thoroughly trained psychologist with some very valuable information, and will be especially helpful to the teacher and others who are frequently called on to straighten out personality maladjustments which require professional attention.

AMOS C. ANDERSON,
Ohio University.

A. M. JORDAN. *Educational Psychology.* New York: Henry Holt and Company. 460 pp. $2.50.

Professor Jordan has written a readable educational psychology—an achievement of no mean proportion in a field which bristles with statisti-

cal and technical studies. To do this he has not made his book a compilation of quotations from original studies but has digested these studies and retold them with a moderate number of original tables and occasional quotations. Such a procedure is almost sure to lose something of the precision of a source book but the compensating gains in clarity, coherence and unity are well worth any such sacrifice made in this book.

The specialist may occasionally sigh for a little more extensive treatment of his particular hobby (specialists usually do) but on the whole little of significance has been omitted. The omission which seemed most startling to the reviewer was the subject of play and its implications for development and education. Only three pages are devoted to the problem of adapting the schools to individual differences. The author no doubt felt that such a subject was more a matter of school administration than of psychology. In only one instance did the reviewer feel that a brief treatment of any topic caused a real weakness in the book. This was the question of racial differences. Here the author has invited the wrath of all environmentalists, and the protests of the "middle-grounders" by comparing negroes and Indians with whites on the basis of the white man's tests and finding them wanting. He quotes from several studies but fails to comment on the fact that northern negroes are superior to southern. Nor does he make any mention of the possibility that the infusion of white blood into negro and Indian races may also carry with it more of the white man's environment. The reviewer is not arguing that racial differences are non-existent but simply that such a "touchy" subject should be treated adequately or not at all.

Problems of learning, how to study, and transfer of training are well handled. Not only has the author given a clear account of the general nature of learning, but he has shown how these principles of learning apply to special school subjects and to behavior problems also. His discussion of mental hygiene is a practical rather than a technical one and hence is of more value to the average prospective teacher. It is impossible to satisfy all psychologists on the debatable topic of instinct and the author has not achieved the impossible. For that we shall not condemn him. In his discussion of the topic the author has assumed a middle ground and achieves a common sense viewpoint. One wonders, however, why family traits and traits belonging to the species (reflexes, instincts, emotions and capacities) should all be lumped together under the head of inherited nature with no distinction.

One particularly commendable feature is the inclusion of so much material of recent date. In a field as much in flux as educational psychology this is especially desirable. The chapters are well summarized an exercises are also provided. In brief the author has used educational psychology in writing educational psychology.

STUART M. STOKE,
Ohio University.

WALTER F. DEARBORN. *Intelligence Tests* (with a sub-title), *Their Significance for School and Society*. Houghton Mifflin Company, New York. 336 pp. $2.50.

Many books have been written about intelligence tests. Usually they have been either for or against and have been written by the friends and makers of such tests on the one hand or by professed enemies and non-users on the other. In either case the result is not wholly desirable. In the present instance the book is both for and against and the author might be classed as a hostile friend or a friendly enemy who has had many years of experience both in making and using the tests.

Concerning the limitations of the tests Professor Dearborn's thesis is that the present tests of general intelligence are not tests of native capacity but of acquired behavior. Furthermore the acquired behavior which is tested is not a wide sampling but a narrow range consisting, for the most part, of verbalistic ability. Therefore the tests are limited in their usefulness to predicting possible school success in academic lines of achievement. By no means should the tests be used as a substitute for Providence. The author is not in favor of abolishing tests but of evaluating them at their true worth. He believes that increasing the scope of the tests to include such things as mechanical ability and others not now tested to any great extent offers the greatest possible field of development for the testing movement. At the present time he is convinced that people with non-verbalistic talents are being slighted by both tests and schools.

Professor Dearborn is an ardent environmentalist. He goes so far as to state: ". . . . we may make the usual proviso, and, assuming a healthy organism, assert that by controlling its habits we may in large measure determine its intelligence." On the other hand he does not go the entire distance for he admits believing that we are not all born alike. As we might expect from the foregoing he is also a doughty opponent of determinism. The book is a good antidote for an excessive faith in intelligence measurements. Many of Professor Dearborn's opinions are supported by demonstrable facts; others are supported by common sense; others are highly speculative. All of them are stimulating, however, and eventually the value of intelligence tests will be enhanced because of the necessity of meeting the criticisms of them and their underlying theories. The author has not attempted a dispassionate view of the problem of nature vs. nurture. Instead he has aimed a pointed and well delivered attack against beliefs that the results of intelligence tests are due to nature solely. In fact he has gone further and minimized nature and emphasized nurture—boldly attacking many widely held theories and substituting others in keeping with his systematic point of view. Middle-grounders will await with interest the fire which is sure to be drawn from the opposition.

S. M. STOKE,
Ohio University.

NEW BOOKS AND PAMPHLETS RECEIVED*

Books and pamphlets for review should be sent to James P. Porter, Department of Psychology, Ohio University, Athens, Ohio.

The Behavior of Young Children of the Same Family. BLANCHE C. WEILL. Harvard University Press, Cambridge, Mass. $3.00. 220 pp.

Business Management as a Profession. HENRY C. METCALF. A. W. Shaw Company, New York. 389 pp.

The Child Guidance Clinic and the Community. R. P. TRUITT, L. G. LOWREY, JUDGE C. W. HOFFMAN, et al. Commonwealth Fund, Division of Publications, 578 Madison Avenue, New York City. 106 pp.

Crossroads in the Mind of Man. TRUMAN L. KELLEY. Stanford University Press, Stanford University, Calif. $4.00. 238 pp.

A Diagnostic and Remedial Study of Potentially and Actually Failing Students at Purdue University. H. H. REMMERS. Bulletin Vol. 28, No. 12, Purdue University, Lafayette, Indiana. 164 pp.

L'Education Esthétique de l'Enfant. P. A. LASCARIS. Librairie Félix Alcan, 108 Boulevard Saint-Germain, Paris, France. 508 pp.

Educational Psychology. A. M. JORDAN. Henry Holt and Company, New York. $2.50. 460 pp.

Elementary Psychology Outline. CARL E. SEASHORE. University of Iowa, Iowa City, Iowa. 25 cents. 16 pp.

German-English Dictionary of Psychological Terms. C. A. RUCKMICK. Athens Press, Iowa City, Iowa. 45 pp.

Guidance of Childhood and Youth. Compiled by Child Study Association of America. Macmillan Company, New York. 324 pp.

Infancy and Human Growth. ARNOLD GESELL. Macmillan Company, New York. 418 pp.

Introduction a la Psychologie Collective. DR. CHARLES BLONDEL. Librairie Armand Colin, 103 Boulevard Saint-Michel, Paris, France. 207 pp.

Is the Latent Time in the Achilles Tendon Reflex a Criterion of Speed in Mental Reactions? GEORGE H. ROUNDS. Archives of Psychology, Columbia University, New York City. $1.25. 91 pp.

The Lure of Superiority. WAYLAND F. VAUGHAN. Henry Holt and Company, New York. $3.00. 307 pp.

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* Mention here does not preclude further comment.

Outline of Child Study. BENJAMIN C. GRUENBERG. Macmillan Company, New York. 289 pp.

Positive Versus Negative Instruction. JAMES VAUGHN. National Bureau of Casualty and Surety Underwriters, New York City. 172 pp.

Practice Exercises in the Mechanics of Written English for the High School. MATTHEW H. WILLING. Bureau of Publications, Teachers College, Columbia University, New York. 76 pp.

The Problems of Childhood. ANGELO PATRI. D. Appleton & Company, New York City. 308 pp.

The Problems of Indian Administration. Institute for Government Research, 26 Jackson Place, Washington, D. C. 55 pp.

Psychology: Its Facts and Principles. H. L. HOLLINGWORTH. D. Appleton and Company, New York. 539 pp.

Psychology of Infancy and Early Childhood. ADA HART ARLITT. McGraw-Hill Book Company, New York. $2.00. 228 pp.

The Psychology of Personality. ENGLISH BAGBY. Henry Holt and Company, New York. $2.50. 233 pp.

Psychological Foundations of Management. HENRY C. METCALF. A. W. Shaw Company, New York. 309 pp.

Psychologie der Arbeitshand. DR. FRITZ GIESE. Urban & Schwarzenberg, Friedrichstrase 105 b, Berlin, Germany. 325 pp.

De Psychotechnick der Beroepskeuze. DR. J. L. PRAK. J. B. Wolters, N. M., Groningen, Germany. 272 pp.

Report on Age and Progress of Pupils in the Boston Public Schools. School Document No. 12, 1925. Boston Public Schools, Boston, Mass. 136 pp.

School Training of Gifted Children. H. H. GODDARD. World Book Company, Yonkers, N. Y. 226 pp.

Social Psychology. ROBERT H. THOULESS. W. B. Clive, New Oxford Street, London, England. 376 pp.

Speech Defective Children in a Large School System. J. E. W. WALLIN. Miami University, Oxford, Ohio. Price 20 cents. 45 pp.

Directory of American Psychological Periodicals (*Continued*)

Journal of Personnel Research—Baltimore: Williams & Wilkins Co. Subscription $5.00. 500 pages approximately. Edited by Walter V. Bingham, and Clarence S. Yoakem. Bi-Monthly.

Genetic Psychology Monographs—Worcester, Mass.: Clark University Press. Subscription $7.00 per volume. Two volumes per year, 600 pages each. Edited by Carl Murchison and an international co-operating board. Monthly. Each number one complete research. Child behavior, differential and genetic psychology. Founded 1925.

Psychological Abstracts—Princeton, N. J. Subscription $6.00. 600 pages ann. Edited by W. S. Hunter. Monthly. Abstracts of psychological literature. Founded 1927.

Mental Measurement Monographs—Baltimore: The Williams & Wilkins Company. Subscription $5. 400 pages annually. Founded 1925. Edited by Knight Dunlap and Buford Johnson. Published without fixed dates, each number a single research.

Studies in Psychology and Psychiatry—Baltimore: The Williams & Wilkins Company. Subscription $5. 400 pages annually. Founded 1926. Edited by Edward A. Pace. Published without fixed dates, each number a single research.

Journal of General Psychology—Worcester, Mass.: Clark University Press. Subscription $7. 600-700 pages annually. Edited by Carl Murchison and an international co-operating board. Quarterly. Experimental, theoretical, clinical, and historical psychology. Founded 1927.

Directory of American Psychological Periodicals

American Journal of Psychology—Ithaca, N. Y.; Morrill Hall.
Subscription $6.50. 600 pages annually. Edited by M. F. Washburn, K. M. Dallenbach, M. Bentley, E. G. Boring. Quarterly. General and experimental psychology. Founded 1887.

The Pedagogical Seminary and Journal of Genetic Psychology—Worcester, Mass.: Clark University Press. Subscription $7. 700 pages annually. Edited by Carl Murchison and an international co-operating board. Quarterly. Child behavior, differential and genetic psychology. Founded 1891.

Psychological Review—Princeton, N. J.: Psychological Review Company.
Subscription $5.50. 480 pages annually.
Bi-monthly. General. Founded 1894. Edited by Howard C. Warren.

Psychological Bulletin—Princeton, N. J.: Psychological Review Company.
Subscription $6.00. 720 pages annually. Psychological literature.
Monthly. Founded 1904. Edited by Samuel W. Fernberger.

Psychological Monographs—Princeton, N. J.: Psychological Review Company.
Subscription $6.00 per vol. 500 pp. Founded 1895. Ed. by Raymond Dodge.
Published without fixed dates, each issue one or more researches.

Psychological Index—Princeton, N. J.: Psychological Review Company.
Subscription $4.00. 300-400 pp. Founded 1895. Edited by W. S. Hunter. An annual bibliography of psychological literature.

Journal of Philosophy—New York; 515 W. 116th St.
Subscription $4. 728 pages per volume. Founded 1904.
Bi-weekly. Edited by F. J. E. Woodbridge and Wendell T. Bush.

Archives of Psychology—Sub-Station 84, N. Y.: Archives of Psychology.
Subscription $6. 500 pp. ann. Founded 1906. Ed. by R. S. Woodworth.
Published without fixed dates, each number a single experimental study.

Journal of Abnormal Psychology and Social Psychology—Albany, N. Y.
Subscription $5. Boyd Printing and Publishing Co. Edited by Morton Prince in co-operation with Floyd H. Allport.
Quarterly. 432 pages annually. Founded 1906. Abnormal and Social.

Psychological Clinic—Philadelphia: Psychological Clinic Press.
Subscription $2.50. 288 pages. Ed. by Lightner Witmer. Founded 1907.
Without fixed dates (9 numbers). Orthogenics, psychology, hygiene.

Training School Bulletin—Vineland, N. J.: The Training School.
Subscription $1. 160 pp. ann. Ed. by E. R. Johnstone. Founded 1904.
Monthly (10 numbers). Psychology and training of defectives.

Comparative Psychology Monographs—Baltimore: Williams & Wilkins Co.
Subscription $5. 500 pages per volume. Edited by W. S. Hunter.
Published without fixed dates, each number a single research.

Psychoanalytic Review—Washington, D. C.: 3617 10th St., N. W.
Subscription $6. 500 pages annually. Psychoanalysis.
Quarterly. Founded 1913. Ed. by W. A. White and S. E. Jelliffe.

Journal of Experimental Psychology—Princeton, N. J.
Psychological Review Company. 500 pages annually. Experimental.
Subscription $6.00. Founded 1916. Bi-monthly. Ed. by Madison Bentley.

Journal of Applied Psychology—Baltimore: The Williams & Wilkins Co.
Subscription $5.00. 400 pages annually. Founded 1917. Bi-monthly.
Edited by James P. Porter, Ohio University, Athens, Ohio.

Journal of Comparative Psychology—Baltimore: Williams & Wilkins Co.
Subscription $5. 500 pages annually. Founded 1921.
Bi-monthly. Edited by Knight Dunlap and Robert M. Yerkes.

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